INVESTIGATION OF FINANCIAL AND VALUE ADDED OF CRYSTAL PALM SUGAR AGRO INDUSTRY

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ABSTRACT

The research aimed to find out the processing of crystal palm sugar of KBU PKBM Al - Mubarokah; to analyze total production cost, profit, and feasibility of crystal palm sugar; to calculate BEP and value added of crystal palm sugar agro industry as diversified palm sugar product. The method used in the research was a case study of KBU crystal palm sugar of PKBM Al Barokah at the Cikuya Village, Culamega District, Tasikmalaya Regency. Respondent were determined using census sample technique to all the 30 farmer member of KBU crystal palm sugar of PKBM Al – Barokah. Based on the results and discussion, it is calculated that financially, crystal palm sugar agro industry was profitable as the weekly actual production volume of 52.5 kg and the weekly actual revenue Rp 787.702.00 above the BEP both for production unit and money. The weekly BEP of production volume was at 1.39 kg with revenue of Rp 20.702.00, the crystal palm sugar agro industry was efficiently carried out indicated with the R/C ratio greater than 1.86. The value added that is generated from the processing of sugar palm sap into the crystal palm sugar was Rp 2.834.00 per liter, Rp 810.00 was the labor cost, and Rp 2.024.00 was the profit.

Keywords: financial, added value, crystal palm sugar.

INTRODUCTION:

Agricultural sector has important role in the national economy. It can be seen from the occurred phenomenon during the economic crisis, the agricultural sector able to survive and able to grow positively and able to absorb labors so alleviate the risk of economic growth decrease wholly (Yudhoyono, 2004 *in* Putra, 2011). Agricultural sector itself is divided into various sub sectors that grouped based on the plants type, that is crop, horticulture, and plantations (Pahan, 2008).

One of plantation plants is sugar palm (Arrenga pinnata merr). The plant is one of plantation commodities that has high economic value because almost all of the plant part has value to sell and bring financial benefit. The fruit can be used as kolang-kaling which in vogue, the leaves can be used as handicraft materials and the roof. The roots can be used as the herbs, and the stem can be used as fiber and the old stem can be used for furniture and the young one can be taken the sago. But the part which has high economic value is the sap of sugar palm (Bank Indonesia, 2009).

The sugar palm trees are trees that produced industrial materials. Almost all part of the plants can be used and has economic value. But the plants get little attention to be cultivated from various parties. Even the product demand come from the plants either for export or food increase continuously (Hatta, 1993).

Palm sugar is known in Indonesia as the sweetener for food and beverage that can be used as the substitute for granulated sugar. The sugar palm can be shaped become solid palm sugar and crystal palm sugar. The solid palm sugar is obtained by cooking the sugar palm sap up to be thickened like taffy, then pour it into mould. Crystal palm sugar, the cooking is longer, up to the sugar become crystal, then be dried or put in oven up to the water content under 3 (three) percent (Bank Indonesia, 2009).

The opportunities for sugar palm tree for palm sugar is still opened widely. The demand for the commodity never decreases and so far the demand can not be fulfilled. The palm sugar that come from the sap of the sugar palm tree is preferred by consumer then other sugar products. Because of that, the palm sugar industry is the alternative to improve the people welfare, because the processing can be done in simply and with small capital (BPTP-Banten, 2005).

The palm sugar business activities including in the agro industry (with material of agricultural product), with material of sugar palm sap. Agro industry is one of industrial branches that relate closely and directly with agriculture. Agro industry as one of important sub systems in the agro business has potentials to support high economic growth because the market share and value added are high enough. As one of agricultural business sub system, the agro industry activities have good prospect to develop in Indonesia, if the policy action to this commodity can be done quickly.

According to Hicks (1995), agro industry is activities featured by (1) improving value added (2) producing product that can be marketed or be used or eaten (3) improving the storability (4) and (4) adding income or profit for the producer. The development of agro industry including various aspects, such as producing value added, creating employment, improving foreign exchange income, improving the income even distribution, even able to attract the agricultural sector development as the raw materials sector.

The agro industry development actually still facing some obstacles, such as (1) the low availability security and the raw material quality (2) the agro industrial product quality still unable to fulfill quality standard that is demanded by market, especially international market, (3) the not profesional human resources (4) insufficient infrastructure (5) the processing technology dot not develop (6) funding source is limited (7) the marketing is not developed yet (8) there is no real policy that able to support the agro industrial development domestically (Supriyati, 2008).

The crystal palm sugar is innovative product from the sugar palm sap processing that is in the powder form or yellow to brown small granules. The sugar palm sap so far is produced into solid sugar, will has value added if processed become crystal palm sugar. The crystal palm sugar has value added if compared with the solid palm sugar (1) the crystal palm sugar is more practical and ready to consumed, (2) the water content is lower so the storability is longer, (3) the crystal palm sugar is packaged into practical package while the solid palm sugar difficult to store, and (4) more hygiene.

The crystal palm sugar is suggested by the health expert because low calorie content if compared with the granulated sugar. The palm sugar has glycemic index lower about 35 while at the granulated sugar about 58 (Nenania, 2011). The glycemic index will impact to pancreas fatigue index, the higher glycemic index the higher the pancreas fatigue index, so the palm sugar is more suggested for diabetic sufferer compared with the granulated sugar. The Community Learning Activity Center/Pusat Kegiatan Belajar Masyarakat (PKBM) of Al-Mubarokah is learning center as the cooperation of Education Agency of Tasikmalaya Regency with the Al Mubarokah foundation that one of it s program in the entrepreneurship through community empowerment to

make them know their own potentials and abilities, and finding alternative opportunities and problems solving and able to take decision to use natural resources efficiently and in sustainable way that direct to food autonomy movement.

PKBM Al Mubarokah at the Culamega Distric of Tasikmalaya Regency is one of PKBM that initiates to carry out new more innovative business, that is sugar making without chemical materials in the form of crystal palm sugar. The solid palm sugar is considered as not practical because if we want to use the sugar, we should cut it first. The crystal palm sugar has advantages where the consumer able to use it without slicing first, recall to its powder form.

Sugar palm plants in the area are not cultivated and proliferate themselves. If the condition is left, then it will become a problem for the craftsman because they will lack of raw materials, and become problem if want to develop the product, so with the agro industry of the crystal palm sugar, it is expected the palm sugar trees are maintained its presence. Beside that most craftsmen do not run their business optimally based on the well financial reporting yet, so the profit (financial investigation) and the value added of the product is still gross (without detail calculation)

Based on the proposed problems, then the investigation is interesting to do. The research is only limited at the facing problems, that is how much income from the agro industry done at the PKBM Al Mubarokah, whether the industry is feasible to develop or not, when the break even point of the production can be reached and how much the value added is obtained from the industry.

The investigation aimed at knowing 1) the making process of crystal palm sugar, 2) the production cost, revenue, profit, and R/C ratio, 3) the break event point, and 4) the value added of the crystal palm sugar at the PKBM Al Mubarkokah.

RESEARCH METHOD:

The research method used case study. According to Sugiyono (2004), the case study method is research that do not take sample from population by using questionnaire as the main data collection.

The PKBM Al Mubarokah at Cikuya Village, Clamega Distric, Tasikmalaya Regency, as the research object taken purposively, it is not random ant selected based on certain calculation (Singarimbun and Effendi, 2004). It is because the PKBM Al Mubarokah is one of PKBM that has implemented the Business Learning Group (KBU) of crystal palm sugar agro industry (Disdik Jabar, 2001). The research was done suitable with the goals that want to reach, it was descriptive. Based on the information data that were obtained from PKBM Al-Mubarokah, the Business Learning Citizen (WBU) in this palm sugar KBU are 30 person so the respondents are determined by census by taking all respondents.

RESULTS AND DISCUSSION:

STEPS IN THE CRYSTAL PALM SUGAR PROCESSING:

TAPING OF THE SUGAR PALM:

The direct interview results at the research site, the sugar palm trees can be tapped in age between ten to fifteen years old or after the emerging of male flower at the stalk at the bud of the tree, under the young leaves. Other obtained results at the research site the female flower is not tapped, beside the unsatisfied results, the taping needs longer time, sometime up to one year. It is suitable with the statement of Widyawati (2011) and Novarianto (1994), the palm sugar craftsmen in general taps the male flower and the because the amount and the quality of the sap are better then that come from the female flower less satisfied.

The male bunch that ready to sap if the pollen has fallen. The signs can be seen for the sapper because the pollen has many so when it come out then the soil under the tree become in yellow, covered by the pollen (Muhaemin, 2012). Other way to know the readiness for male flower sapping as reported by Kalu (2007), male flower is ready to tap if the color change from green to light violet, beside that if the male flower is cut in half, if the pollen has in yellow or if it is pressured by fingers then will be crushed like flour, then the bunch ready to tap.

Each male bunch can be tapped continuously, if the incised bud can not produce the maximum sap then before, then the taping can be done at other bud. Before conduct the taping, the first clean from the bract and dirt, and epiphyte at the stalk so do not disturb the taping. After it is clean, hit the bunch that will be sapped. According to Widyawati (2011), the hitting done carefully so the bunch stalk not break. The hitting to loose the phloem in the bunch stalk.

The taping of the sap process at the research site done 2 (twice) in a day in the morning and in the afternoon. The outcome also different, in the morning the yield is more than in the afternoon. It is caused by the natural and weather factor. In the night the cold, humid, and long taping time produces more sap. While the taping at the afternoon usually lesser because of hot weather and the sap evaporate beside the shorter taping time.

The mounting of the bamboo tube as the sap container done after the sap come out smoothly. The tube is

prepared specially with 75-150 cm in length, mounted at the bunch end with the tube mouth enter into bunch about two or three cm. In order the sap enter in the tube, the lower part of the bunch is incised. The bunch end with the tube mouth is closed with palm fiber or clothes so prevented from the disturbance of rat, bat, and bee. To make the tube does not fall when filled with the sap, then the base is tied and hanged at the stem of the leaves or at the stem (Effendi, DS., 2010; Lay A and Heliyanto B, 2011).

Production process of the crystal palm sugar:

The process of crystal palm sugar is done in several activities. The crystal palm sugar making is initiated by burning the wood as the fuel, then the sap entered into the pan by filters the sap first by using three layers cloths or kalo filter. The filter is done so the sap free from the dirt from the taping. The sap then be cooked because if it is left to long will become acid and can not be used as the raw materials of sugar making. By maintaining the pH around 6.0-7.0, the craftsmen at the PKBM Al- Mubarokah used the raw materials of kawao roots that are cut in finger size or about three cm.

The sap water then entered into the pan after the fire ready. The sap is boiled and stirred to accelerate the thickening. The emerging white foam then be removed so the sap not in dark water and durable. The firewood is added if the fire insufficient.

When the sap boils and seem will overflow, then adding by frying oil sufficiently or about three spoons in each cooking process. It is aimed at decreasing the sap overflow so do not overflow and make it thicken and harden, then the color change. After the sap thicken, the stirring is still continued and the fire is decreased. The stirring done up to the water content so little or become drying.

After the sugar drying, then the formed sugar is refine by crushing with tools made from wood or using coconut shell. The treatment is done because of the crystal palm sugar making at the PKBM Al- Mubarokah still done traditionally. The crushing is done after the sugar left for a while so not to cold or hot. The process is done after the sugar in the form of refined powder or known as crystal palm sugar.

After the refined powder sugar formed, the next step is sieving by sieve. The outcome then ready to consume, for the coarse sugar the crushing is done again and sieving again.

The final step is the crystal palm sugar is placed in the plastic pan then be dried by using sun ±30 minutes. The drying process is done for water content become lower so the crystal palm sugar is durable.

The crystal palm sugar production by the KBU member at the PKBM Al- Mubarokah in average 7.5 kg per day from the sap material of 46.785 liters. The calculation showed that 6.25 liter of sap produced 1 kg crystal palm sugar.

COST ANALYSIS:

FIXED COST ANALYSIS:

Cost analysis is done by economic analysis approach, that is by calculating all cost (Aliudin, Sariyoga S, Anggraeni D, 2011), although the craftsmen expense money insignificantly. The fixed cost at the agro industry of crystal palm sugar including: tax payment cost that include the land and building tax (PBB), the equipment depreciation and capital interest. The land and building tax is calculated because the making done at each craftsman house, not rent.

The equipment depreciation is calculated to some crystal palm sugar production equipments owned by respondents, then be assessed the economic life to calculate the depreciation cost each maintenance period. The equipment condition will depreciate continuously during the usage and finally should be replaced.

The capital interest is calculated, the interest is 16 percent per year suitable with the bank interest during the research. The capital interest that is calculate for one production period of one week.

Table 1: The fixed cost average of each craftsman of crystal palm sugar at the PKBM Al- Mubarokah, Cumalega District, Tasikmalaya Regency, 2012

Fixed cost	Average amount per production period (Rp)
Land and building tax	1.057
Depreciation cost	7.622
Capital interest	1.258
Amount	**9.397**

Table 1 showed that the fixed cost for agro industry of crystal palm sugar reached Rp 9.937, per production period. The data showed that the depreciation cost of the equipment become the highest component for the crystal palm sugar agro industry at the PKBM Al- Mubarokah.

VARIABLE COST ANALYSIS:

Variable cost is cost per production unit is fixed, but will change if the production volume changes (Nugroho, 2002). The cost type including in the variable cost at the agro industry of crystal palm sugar is the raw material cost, labor cost, and firewood cost, frying oil cost, transportation cost, and variable capital interest.

The raw material cost is cost that is spent to buy raw materials. In this case is assumed that the raw materials got by buying. The price per liter of the raw materials obtained from the calculation of taping labor cost Rp 25.000.00 per day with maximum sap of 180 liters per day (12 lodong) so produced sap price of Rp 140.00 per liter.

The involved labors in the crystal palm sugar making in the family usually done by women. The labors in the making of crystal palm sugar at the crystal palm sugar KBU of PKBM Al- Mubarokah only done by 1 (one) person and from the obtained information, the wage to cook of Rp 30.000 per day or Rp 210.000.00 per week.

Firewood is used in the making of crystal palm sugar at crystal palm sugar KBU of PKBM Al- Mubarokah about 2.065m^3 per day. The wood price in the research site Rp 70.000.00 per m^3 per day. So the cost for firewood cost for each craftmen abot Rp 144.375.00 per production or Rp 4.331.250.00 per week. The firewood cost is the biggest component in the variable cost during the crystal palm sugar making at the PKBM Al- Mubarokah.

Other used input in the crystal palm sugar making at the crystal palm sugar KBU of PKBM Al- Mubarokah, is the frying oil. From the obtained information, the usage of frying oil for *mepes* about 10 gram for each 25 liters of sap or about ±3 spoon. The frying oil price a the research site of Rp 10.500.00 per kg. The average cost of frying oil used Rp 1.379.17 per day or Rp 41.375 per week.

The other component of the variable cost is the transportation cost to the collector. The prevailing transportation cost of Rp 200.00 per kg of crystal palm sugar. So the average transportation cost rp 10.511.00 per day or Rp 315.320.00 per week.

The capital interest is calculated from the raw materials, labor, firewood, frying oil cost and transportation cost to the collector, the capital interest cost is 16 percent per year suitable with the bank capital prevail during the research. The capital interest value for 1 production (one) week.

TOTAL COST ANALYSIS:

The total amount of cost that should be spent for the craftsman at crystal palm sugar KBU of PKBM Al-Mubarokah in average of Rp 421.944.00 per week. The total cost analysis for one production period in table 2.

Table 2. Total cost of crystal palm sugar production at the crystal palm sugar KBU of PKBM Al- Mubarokah

Cost	Amount
Fixed cost	Rp 9.937.00
Variable cost	412.00.00
Total cost	**Rp 421.994.00**

The total of variable cost for agro industry of crystal palm sugar in average about Rp 412.000.00 for one production. Table 2, shown that the fixed cost average for the agro industry of Rp 9.937.00 per production period. The total cost of the agro industry obtained by adding the fixed and variable costs.

ANALYSIS OF REVENUE, PROFIT AND R/C RATIO:

REVENUE:

The factors that influence the profit is the revenue and production cost. The revenue of the crystal palm sugar is the production value obtained from the multiplication of crystal palm sugar production with the price per kilogram. During the research, the crystal palm sugar price Rp 15.000.00 per kg. he price at the craftsman level and the price at the collector of Rp 16.000 up to Rp 17.000.00 per kg.

The crystal palm sugar production that is produced at the crystal palm sugar KBU of PKBM Al- Mubarokah in one production period of 52.55 Kg so in average the revenue obtained from the production about Rp 788.300.00 for one production period.

PROFIT:

Profit is the difference between total revenue with the total cost that is spent in the production process. To know the obtained profit from the business of crystal palm sugar, mathematically can be written as follows:

Protif = TR-TC

The revenue total that is obtained Rp 788.300.00 with total production cost Rp 421.944.00 so the profit average

of the crystal palm sugar production of Rp 369.696.00 per production period.

R/C RATIO ANALYSIS:

R/C ratio analysis is one analysis to know whether the business profitable or not, and to know the feasibility of a business. The analysis calculation done by comparing between the total revenue and the total cost (Oktoviantini, V. 2010).

Table 3. R/C ratio value in average for crystal palm sugar agro industry at crystal palm sugar KBU of PKBM Al- Mubarokah

Explanation	Amount
Revenue total average	788.300.00
Cost total average	421.944.00
RC	**1.86**

From the table 3, it is known that the agro industry of crystal palm sugar has R/C ratio average of 1.86. It figures that the agro industry has profit relative, where each Rp 10.000.00 cost spent able to produce profit of Rp 18.600.00 . The RC ratio value more than 1 shoed that the business at the crystal palm sugar KBU of PKBM Al- Mubarokah has been efficient, because the revenue is higher than the cost.

BREAK EVEN POINT ANALYSIS:

Business can be said as break even if the business at certain time, the amount between variable cost and fixed cost equal with the total revenue. It means the business do not suffer financial loss and do not obtain profit. The balance point usually presented in the graphical form, because not only show where the point, but also show the possibilities that relate with the cost change or the sales outcome.

Break even point analysis can be used as the profit planning to plan the profit that will be obtained in a production effort, or can be served as controlling in the production, at what production a business able to reach break even (Sigit, S, 1990).

The break even not as the operational goals of company but try to reach production/sales volume above break even. Break even analysis is important to know at what production /sales the total cost will equal with total revenue, so facilitate the leader or business owner to take policy in determining the production level /sales volume to get the profit.

The break event value for revenue at the production activities of crystal palm sugar of Rp 20.702.00. Knowing the break even point, the craftsman unit able to determine the production level that should be sold at the break even, that is how much the selling price of product, it was Rp 15.000,00 per kg of crystal palm sugar. At the break even point the entrepreneur will not loss, the break even point of the research will be reached if the product sales of 1.39 kg.

While to know whether the actual sales level of crystal palm sugar so far exceed or less than the break even point sales, it can be seen in the table 4, showed that for a production period, the actual sales analysis for the crystal palm sugar has exceeded the break even point.

Table 4. The comparison of sales at the break even point and the actual sales of crystal palm sugar production activities at the crystal palm sugar KBU of PKBM Al – Mubarokah

Unit	Break even point	Actual sales
Kilogram	1.39	52.5
Rupiah	20.702.08	787.500

The quantity limit of break even point was 1.39 kg crystal palm sugar with sales value of Rp 20.702.00, while for actual sales has reached 52.5 kg, with the actual sales Rp 787.500.00. The difference of actual sales to the break even point sales has given profit for the craftsman. Because of that, for each addition of actual product sales of the crystal palm sugar will improve the profit of the craftsman.

VALUE ADDED ANALYSIS:

Value added analysis of the production is done to know the value added of production and to know the obtained margin to the production factor that used in the processing activities (Hayami, Y, Thosinori M., and Masdjidin

S, 1987; Slamet, Utje Usman, 2005).

The value added analysis at the crystal palm sugar production uses kilogram unit of sap with assumption of 1 liter of the sap equal with 0.8 kg of the sap. The use of sap average per one production of Rp 37.5 kg. The supporting raw materials in one production of 0.18 kg frying oil with price of Rp 10.500.000 per kg.

The average output that is produced in one production, that is crystal palm sugar, of Rp 7.5 kg/day. The conversion value between output and input is 0.2. The conversion factor value describe the raw material productivity of sap, the efficiency level to use the sap raw material in producing the crystal palm sugar.

The used workers in the sap cooking process for each household is one person. The worker come from the family. The job usually done by women.

Worker coefficient is the division value of the work day in a day with the main materials that are used in the production. The coefficient value of the worker obtained of 0.027 showed that the work day (HOK) that is needed to process 1 kg of sap needs 0.0027 HOK. The coefficient value of worker described the productivity of the worker, that is the coefficient level to use the worker in the production activities of the crystal palm sugar.

The average wage (Rp per HOK) in the production is Rp 30.000,00. The product price is Rp 15.000.00 per kg of crystal palm water is the raw material price that determined by the craftsman, while the main raw material of sap Rp 140.00 per liter, is the conversion results of the maximum quantity of sap tapping with the tapping wage per day. The other input contribution Rp 26.27 per Kg of raw materials, obtained by dividing all other contribution that is used. The contribution of other input only in the form of additional raw materials.

The obtained value added from the production activities of the crystal palm sugar Rp 2.834.00 per kg of the sap raw materials, the difference between the output with the main raw materials price and the other input contribution. The value is the gross value added because contains share for the direct worker income. The value added ratio is the percentage of value added to the output, that is 94.46 percent that showed for each Rp 100.00 of the output value get value added of Rp 95.00.

The income of direct workers from the multiplication of coefficient value of direct worker with the worker wage, that is Rp 810.00 per kg raw materials, that showed the received revenue by direct workers for the processing of each kg of raw materials of sap. The share of direct worker is percentage of the direct worker revenue to the value added of one kilogram of main raw materials, that is 28.6 percent showed that for each Rp 100.00 from the value added then the workers get share of Rp 28.60.

The profit of the business Rp 2.024.00 per kg main raw materials, is the difference between the value added with the direct workers income, so it can be considered the value added value that is received by the craftsman. The profit level is the percentage of the profit amount to the output value, that is 71.42 percent that show that for each Rp 100.00 of the output value then the company will get profit of RP 71.42.

Margin showed the contribution of production factor beside the main raw materials in producing the production output in the form of crystal sugar palm. The obtained margin from the results of output value decrement by the main raw materials, that is RP 2.860.00, then be divided into direct worker revenue Rp 111.54 or about 3.98 percent, and other input Rp 26.31 or about 0.92 percent and hen for the business profit of Rp 2.024.00 or about 70.77 percent.

CONCLUSIONS AND SUGGESTIONS:

Based on the results then the conclusion as follows:

1. The crystal palm sugar is financially profitable for the craftsman because the actual production average of 52.5 kg per week, and the actual revenue Rp 787.500.00 per week has exceeded the break even point in product unit or in rupiah. The product value at the break even point reached level of 1.39 kg per week with the revenue value of Rp 20.702.00.
2. The agro industrial business of the crystal palm sugar has been done efficiently, that shown by the R/C ration that higher than 1, that is 1.86.
3. The value added that is obtained from the sugar palm sap processing become the crystal palm sugar is Rp 2.834.00 per liter of the sap and divided into worker revenue Rp 810.00 and the business profit of Rp 2.024.00.

SUGGESTIONS:

1. The agro industrial development is impossible to do by the craftsman / KBU crystal palm sugar only. The continuous support and supervision from government, related institutions and financial institution is needed in supporting the more modern processing equipments procurement, work capital and help the marketing network.

2. The palm sugar is not only limited at the crystal palm sugar only, but also be managed for other processed products that have high economic value such as ethanol hydrate so produced more varied processed product and able to improve the craftsman income and create employment.

REFERENCES:

[1] Aliudin, S.S. and Anggraeni D. (2011). Efficiency and Income of Solid Palm Sugar (Case at Palm Sugar Craftsman at Cimenga Village, Cijatu District, Lebak Regency, Banten Province). *Journal of Agro Economy*: Vol. 29, 108 – 117.

[2] Bank Indonesia. (2009). *Purchasing Pattern of Palm Sugar Micro Entreprise*. Jakarta: BI.

[3] BPTP-Banten. (2005). *Social Economic Investigation of Palm Sugar in Banten***.** Banten: Bureau of Agricultural Technology Investigation.

[4] Disdik Jabar. (2001). *Information About Communities Learning Center (PKBM) of West Java Province*. Bandung: Subdin PLS of Disdik Jabar.

[5] Effendi, D.S. (2010). Palm Development Prospect *(Arenga pinnata Merr). Perspective Journal: Research and Development Center of Plantation*: Vol. 9, 36 – 46.

[6] Hatta, S. (1993). *Palm Cultivation and Its Multipurpose*. Yogyakarta: Kanisius.

[7] Hayami, Y., Thosinori M., and Masdjidin S. (1987). *Agricultural Marketing and Processing in Upland Java: A Perspective from Sunda Village*. Bogor: CGPRT Center.

[8] Hick, P.A. (1995). An Overview of Issues and Strategies in the Development of Food Processing Industries in Asia and Pacific. *APO Symposium. September 28 – October 5*. Tokyo.

[9] Kalu, A.R. (2007). Cost Analysis of Palm Tapping of Communities Around Bunguro Forest, Pangkep Regency. *Journal of Communities Forest*: Vol. 2, 237-251.

[10] Lay, A. and Heliyanto B. (2011). Prospect of Palm Agro Industry *(Arenga pinnata). Perspective Journal: Research and Development Center of Plantation*: Vol. 10, 1 – 10.

[11] Muhaemin (2012) *http://ditjenbun.deptan.go.id/budtan*. Retrieved January 5, 2013, from Http://ditjenbun.deptan.go.id

[12] Nenania. (2011). *http://lppm.ugm.ac.id/sikib-ugm.* Retrieved January 5, 2013, from http://lppm.ugm.ac.id

[13] Novarianto. (1994). *www.litbang.deptan.go.id*. Retrieved January 5, 2013, from www.litbang.deptan.go.id

[14] Nugroho, B. (2002). *Cost analysis of Forestry Project*. Bogor: YPFK, IPB.

[15] Oktoviantini, V. (2010). Economic Feasibility Analysis of Corn Chips Agro Industry in Effort to Develop Business. *Journal of Agricultural Business*, Vol. 8, 45 – 58.

[16] Pahan, I. (2008). *Complete Guidance for Palm Coconut – Agricultural Business Management from Upstream to Downstream*. Jakarta: Penebar Swadaya.

[17] Putra, R. (2011). *Financial Feasibility Analysis of Palm Sugar Processing In Group at Kanagarian Talang Maur of Mungka District, Lima Puluh Kota Regency, West Sumatra* . Padang: Agricultural Faculty Andalas University.

[18] Sigit, S. (1990). *Break Even Analysis: Brief and Practical Linear Design*. Yogyakarta: BPFE.

[19] Singarimbun, M. and Effendi S. (2004). *Research Method of Survey*. Jakarta: LP3ES.

[20] Slamet, U.U. (2005). Value Added and Return of Production Factors of Agricultural Product. *Research Bulletin and Agricultural Development*, Vol. 30, 1 – 8.

[21] Supriyati, T.H. (2008). Terrase of Value Added by Agro Industry. *Journal of Research and Agricutural Development*, Vol. 30, 14 – 29.

[22] Widyawati. N. (2011). *Success of Future Investment With Palm Tree*. Yogyakarta: Lily Publisher.
