Socio-Economic Characteristics of Agroforestry System in Village of Batulubang Region of Sorong, West Papua

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ABSTRACT

Increased deforestation and critical land in West Papua Province is caused by the diversion of land and other illegal activities. One of the programs launched by the government of Sorong Regency is the involvement of the community in re-greening the forest area through agroforestry activities. This study aims to analyze the socio-economic characteristics of the participants of the agroforestry program in the Batulubang village of Sorong regency. The method used in this research is descriptive method with interview technique and field survey. The research results show that the agroforestry participant community is generally in the age of productive work. The level of community education is moderate, and the land area for the agroforestry system farming is reasonable. The plant species are Lawang wood (*Cinnamomum culilawan*), Merbau (*Intsia bijuga*), Matoa (*Pometia pinnata*), Durian (*Durio zibethinus*), Rambutan (*Nephelium lappacelum*), besides crops. The contribution of agroforestry products increases the income of the community.

Introduction

Forest Area of West Papua Province based on Decree of Minister of Forestry Number: 783 / MENHUT-II / 2014 dated September 22, 2014 is covering an area of 9,703,611.39 Ha. But in the period 2005-2009 there has been a huge destruction of forests in West Papua Covering an area of 1,017,842 hectares or an average of 254,460 ha per year or about 25% of the national deforestation rate in the same period. Furthermore, based on data from the Ministry of Forestry RI in the period 2012 - 2013 there was deforestation area of 10,620.2 Ha and the amount of critical land in 2013 reached 487,343 ha with criticality degree is critical 410.601 Ha and very critical 76.742 Ha. Deforestation is due to the planned conversion of forest areas as well as illegal activities.

The degradation of forests and the number of degraded lands are of grave concern to the government. Forest and Land Rehabilitation (RHL) activities are needed to restore forests and land to normal function and sustainably as a life support system. The public forest is one of the natural resource management models based on community initiative. Public forests in Indonesia are generally developed on community-owned land recognized at the local level (customary land) and on land identified by the government.

The development of community forests by the Government of Sorong Regency is an effort to increase people's income. Lawang wood is a species

that the people have long known of Batulubang Village, therefore the agroforestry system developed by the government in preserving the forest and increasing the income, first of all, of the community around the forest. The combination of forest trees used are Lawang wood (Cinnamomum culilawang, Pometia pinnata, Intsia bijuga and plant multi-purpose tree species (MPTS). The variety of forest trees with crops is also called agroforestry. This study aims to analyze the social and economic characteristics of farmers Agroforestry on Batulubang Village of Makbon district of Sorong Regency.

Research Methods

Research Location

The research was conducted in Batu Lubang Village, Makbon District, Sorong Region, West Papua Province in the Production Forest Management Unit (KPHP) area. The research activities include research preparation, implementation of data collection, and data analysis, which consist of primary and secondary data.

Method of data collecting

This research was conducted by descriptive method with interview technique and field survey. The data collected were general household data, data on economic characteristics of agroforestry such as land ownership and land area, income, agroforestry production inputs, labor.

Data analysis

The data obtained were analyzed as follows:

1. **Economic analysis of community forest business of agroforestry pattern**

   The economic analysis of community forest business of agroforestry pattern is used in the form of cost and income of the community forest business of agroforestry pattern as stated by Hadisapoetro (1973) cited by Hafizinor (2002) as follows:

   a). Cost and revenue analysis

   $$Lu = \sum_{i=1} (Pi \times Yi) - \sum_{i=1} Ci$$

   Where: Lu = Public forest income of agroforestry pattern
   Pi = The price of the i commodity
   Yi = Result of commodity production i

Ci = Costs incurred in the management of public forests of agroforestry pattern
i = 1,2,3, ... i

b). The analysis of the financial feasibility of the community forest business is used NPV, BCR and IRR.

$$NPV = \sum \frac{Bt - Ct}{(1 + r)}$$

Where: NPV = Net Present Value
Bt = Benefit (cash inflow in a period)
Ct = Cost / Cost total
i = Interest Apply
t = Time period
With criteria, if NPV> 0 means the business is profitable, otherwise if NPV <0 means the business is not feasible to cultivate.

$$BCR = \frac{B}{C}$$

Where:

$$B = \sum_{to}^{1=n} \frac{Bi - Ci}{(1 + r)^t} \implies Bi - Ci > 0$$

$$C = \sum_{to}^{1=n} \frac{Bi - Ci}{(1 + r)^t} \implies Bi - Ci < 0$$

Where: BCR = Benefit Cost Ratio
Bi = Benefit (cash inflows in year i)
Ci = Cost / total cost in the year to i
r = interest (bank rate)
t = Time period

With criteria, BCR> 1 otherwise the business is viable and otherwise if BCR <1 means the business is not feasible.

$$IRR = DFd + \frac{NPV}{NPV_2 - NPV_1} \times (DFn - DFd)$$

Where: IRR = Internal Rate of Return (the maximum interest rate that can be paid by a project)
NPV1 = Positive NPV on certain interest rate
NPV2 = Negative NPV on certain interest rates
DFd = First Discount Factor (Interest rate level) where NPV is obtained Positive

DFn = Second Discount Factor (interest rate level) where NPV is obtained negative.

c). Contribution of the community forests business to household incomes is analyzed with the following formula:

$$K = \frac{Lu \times 100\%}{(Lu + Inu)}$$

Where: K = The contribution of community forests business of agroforestri pattern

Lu = Revenue community forests business of pattern agroforestri pattern

Inu = Revenue outside community forest business of agroforestry pattern

The analysis of Factors affecting farmers revenue

The method used in analyzing the factors that affect farmers' income in the Village of Batulubang is a descriptive analysis method to identify and analyze the data collected from the questionnaire, interview, observation, and literature. The data collected and results from the questionnaire are expressed in table form, in the form of respondent characteristic data: age, gender, education, number of children, labor, occupation, land area, cropping pattern, plant species, and community forest agroforestry management.

To know the factors that affect the income of the people is done by multiple linear regression analysis and can be written in the formula:

Y = b0 + b1X1 + b2X2 + b3X3 +b4X4 + b5X5 + b6X6 + b7X7 + b8X8

Where: Y = Revenue of respondent participant agroforestry

bo   = constant

X1   = Planting pattern

X2   = respondent education

X3   = Area of respondent

X4   = main job

X5   = side job

X6   = Number of labour

Results and Discussion

Analysis of the Social Characteristics of Communities in the Agroforestry System

The social characteristics of the community in the agroforestry system in Batulubang Village, District of Makbon were obtained based on the results of the interviews of 32 respondents. Characteristics of respondents analyzed in this study were based on age, education, occupation, number of family members, number of labor, cropping pattern and land area.

Age of Respondents

Putirulan *et al* (2019) mentions that the level of human age is divided into three categories: young age (<30 years), adult age (30 years to 50 years), and old age (> 50 years). Age is one variable that is assumed to have a large influence on the income of respondents. This is because the longer a person manages the agroforestry land, the greater the income he gets. Thus the age of a person, will give more experience in cultivating agroforestry land. The age distribution of agroforestry owners can be seen in Table 1.

Table 1. Characteristics of Respondents by Age

Respondents Identity	Number of People	Proportions (%)
Age (years old)		
< 30	1	3,12
30 - 50	19	59,38
>50	12	37,50
Total	32	100

Occupation of Respondents

Occupation is one of the factors that play a role in determining the income of the community. The respondents' field consists of the leading trade and the secondary occupation (Pastur *et al*, 2012). The main area of respondents was farmers (71.87%) while non-farmers (28.13%). As seen from secondary careers, secondary jobs as Lawang wood refiners (15.63%), timber forest products gatherer (6.25%), and fishermen (18.74%). There are 31.25% of farmers who do not have secondary occupations because they only work as farmers.

Respondents Education Level

The level of education also dramatically affects the income of respondents. The average level of education of respondents reaches six years, and some even go to university level. The majority of respondents' education level is 16 people, or 50 percent are at the primary school level. This situation shows that most of the respondents have low education, but they have known literacy to support the farmers in receiving information and technology. The existence of the level of education will be influential in the

adoption of new technologies. Shodiq *et al.* (2019) states that the higher level of education of farmers, the more increased the knowledge, attitude, and skills in utilizing information technology to support a program.

Number of Family Members

Of all respondents, 53.12% have family members of 4 to 8 people. Respondents who have family members less than three people are 43.75%. Respondents who have family members of more than nine people are 3.13%. Hanum (2018) explains that family dependents are factors causing a person to make decisions in spending money they owned. Families with more family members will have higher expenses than families with smaller members. This causes the family to prioritize spending on basic needs.

Respondents Number of Labour

The amount of labor that contributes to agroforestry activities will significantly affect the income level of farmers. 25% of respondents have a workforce involved in agroforestry activities between 1-2 people, 68.75% of respondents have 3 to 6 workers, and 6.25% more than six people. According to Hanum (2018), more and more cultivated land more and more labor. Labor disbursement differences between the various activities are caused by different cultivation areas, where work tends to be directly proportional to the size of cultivated land.

Land area

The area of land owned by respondents is generally less than 0.5 ha (56.25%). This dramatically affects the variety of crops to be cultivated and the intensity of land management.

Economic Characteristics of Agroforestry System

Economic analysis of agroforestry system approach in this research is by calculating cost and income and contribution of community forest management of agroforestry pattern to household income.

The cost of the community forest business of agroforestry pattern can be divided into two types, namely fixed price and variable cost. In the agroforestry business activities, the charges are not issued at once in the first year until the end of the cycle. To know the amount of expenditure incurred in each planting pattern can be seen in Table 2.

Costs incurred in the community forest business pattern 1, 2, 3, 4, and 5 as working capital include investment cost and production cost. For each component of activities, among others: equipment costs, irrigation, seeds, land clearing, soil processing, pre-

Table 2. Recapitulation of Total Cost of Community Forest Business of Agroforestry Patterns

No	Components of Activities	Expenditure of each Cropping Pattern (Rp/ha)				
		I	II	III	IV	V
1.	Forestry Plants					
	- Lawang Wood	3.610.000	—	–	3.610.000	3.610.000
	- Merbau	—	–	–	-	—
	- Matoa	–	3.567.143	-3.567.143	3.567.143	
2	MPTS Plants					
	- Durian	11.951.667	-	-	-	-
	- Rambutan	11.468.333	11.468.333	11.468.333	11.468.333	11.468.333
3	Agriculture Plants					
	- Cayenne Pepper	63.850.000	-	–	–	–
	- Mustard	–	40.475.000	–	–	–
	- Banana	–	–	–	–	14.090.000
	- Corn	–	–	–	48.030.000	-
	T o t a l	90.880.000	55.510.475	15.035.476	66.675.476	15.078.333

Source : Results of Primer Data Analysis
Information:
Pattern I   :   Lawang Wood + Durian + Rambutan + Cayenne Pepper
Pattern II   :   Matoa + Rambutan + Mustard
Pattern III   :   Merbau + Rambutan
Pattern IV   :   Matoa + Lawang Wood + Rambutan + Corn
Pattern V   :   Lawang Wood + Rambutan + Banana

paring planting hole, planting, maintenance, fertilization, and pest and disease control. The cost incurred is calculated up to the end of the cycle. In this study, it is assumed that trees are cut down at the age of 15 years. The village community of Batulubang manages the forests in agroforestry pattern Lawang wood, Merbau and matoa, durian, and rambutan with a spacing of 5 x 5 m.

Revenue of Community Forest Business

Revenue of community forest business based on the same place and product (Output), accordance to the cost to produce Output referred. In this case, the Output is assessed when the timbers are ripe and the fruit and plant crops are ready for harvest. The nominal income of farming in each Pattern can be seen in Table 3.

Based on Table 3 it is known that the first cropping pattern produces the highest income with contribution coming from the annual crop business. This is in accordance with Andayani's opinion (2005), that one of the strategies that farmers do in order to increase the (economic) output of their farms is by increasing their production per unit area and time through increasing intensity per plant and plant species. Technically the strategy in general intent is to farmer by way of cultivating multiple cropping system or commonly named as agroforestry pattern.

Table 3. The Nominal income of farming in each pattern

No	Component of Activities	Revenue of each Cropping Pattern (Rp/ha)				
		I	II	III	IV	V
1.	Forestry Plants					
	- Lawang Wood	176.000.000	—	-	176.000.000	176.000.000
	- Merbau	–	–	111.268.571	-	–
	- Matoa	–	222.348.857	-	222.348.857	–
2	MPTS Plants					
	- Durian	542.987.500	-	-	-	-
	- Rambutan	354.102.083	354.102.083	354.102.083	354.102.083	354.102.083
3	Agriculture Plants					
	- Cayenne Papper	955.000.000	-	–	–	–
	- Mustard	-	96.000.000	–	–	–
	- Banana	-	-	–	–	36.000.000
	- Corn	-	-	-	230.440.000	-
	T o t a l	2.028.089.583	672.450.940	465.370.654	982.890.940	566.102.083

Source: Primary Data Analysis

Table 4. Profit of Community Forest Business of Agroforestry Pattern

No	Component of Activities	Profit of each Cropping Pattern (Rp/ha)				
		I	II	III	IV	V
1.	Forestry Plants					
	- Lawang Wood	48.675.714	0	0	48.675.714	48.675.714
	- Merbau	0	0	107.701.429	0	0
	- Matoa	0	218.781.714	0	218.781.714	0
2	MPTS Plants					
	- Durian	531.035.834	0	0	0	0
	- Rambutan	342.633.750	342.633.750	342.633.750	342.633.750	342.633.750
3	Agriculture Plants					
	- Cayenne Pepper	891.150.000	0	0	0	0
	- Mustard	0	55.525.000	0	0	0
	- Banana	0	0	0	0	21.910.000
	- Corn	0	0	0	182.410.000	0
	T o t a l	1.814.352.441	762.503.750	429.805.178	994.446.607	414.076.607

Source: Results of Primary Data analysis

Based on the data in Table 2 and 3, it can be calculated the profit of community forest business of agroforestry pattern, as can be seen in Table 4

From the analysis of costs and income as mentioned above, it can be stated that the average of the benefits of community forest development agroforestry pattern is : pattern I Rp. 1.814.352.441, pattern II Rp. 762.503.750, pattern III Rp. 429805.178, pattern IV Rp. 994.446.607 and V pattern Rp. 414.076.607. Highlighted, that the community forest exploitation of agroforestry patterns is financially profitable.

Economic analysis of the feasibility agroforestry by analyzing the cost of expenditure and the cost of benefits derived from the staple crops and plant MPTS during its production period. Details of the costs and benefits of community forest business of agroforestry patterns during the production can be seen in Table 5

Community forest business of agroforestry pattern is financially viable . From the calculation results NPV (Net Present Value) is between Rp. 1813916729,60, - / cycle to Rp. 4855291934, - / cycle. BCR value more than one that is 40,49 until 106,71 and IRR value between 60,12% until 105,45%. This shows that the community forest business of agroforestry pattern in Batulubang Village is capable to pay a higher interest rate than the prevailing interest rates at 35% .

Based on Table 5, it can be stated that the community forest exploitation agroforestry in all Patterns can provide Good financial prospects, judging from the parameters of NPV, BCR, and IRR, so it is feasible to be continued and developed. In addition, such information can be used by the community as a basis for decision-making to determine whether the person needs to take a loan from the bank or not.

In Table 5, there is a variation in the level of profit gained by the community in each cropping pattern, where each cropping pattern has the most significant and financially feasible gains. Based on the interviews, it is caused by several factors such as (a) the variation of commodity types combined, (b) selected level of technological intensification, and (c) the fertility of the soil. While other factors are also thought to influence are: (a) Justification of the application of the concept of joint costs and the joint income of each Pattern are analyzed, (b) the planning stages of farming, (c) the role of relevant agencies, (d) farmers institutional, (e) Differences in the level of knowledge and information held by farmers, especially those related to the management of farming from initial investment to marketing results, (f) external factors beyond the ability of farmers both technical, economic, management, social, cultural and politics.

Of the five planting patterns found in Batulubang Village, cropping pattern one consisting of a combination of Lawang wood + Durian + Rambutan + Chayenne Pepper trees provides the possible benefits the other four cropping ways. Thus the community forest business of agroforestry pattern conducted by farmers in Village of Batulubang, District of Makbon is feasible to be developed.

Income Contribution of Community Forest Business of Agroforestry Patterns

The differences in occupation will lead to differences in the amount of income for each respondent. This income is calculated within one year from respondents' professions, either from agroforestry or outside agroforestry. Respondent's Revenue as presented in Table 6.

People of Batulubang Village have variety of occupations, but all of them have their own land (forest), so the community benefited from the agroforestry patterns. The above calculation noted that private forest agroforestry patterns contribute

Table 5. Productivity of Agroforestry Systems Based on Planting Pattern 1, 2, 3, 4 and 5

| No | Planting Pattern | Total | | NPV (Rp/cycle) | BCR | IRR (%) |
		Revenue Terdiskonto (Rp/cycle)	Expenditure Terdiskonto (Rp/cycle)			
1	Lawang Wood Durian Rambutan	4964080899	98276175,17	4865804724	106,94	105,45
2	Matoa Rambutan	1931755355,64	98276175,17	1833479180	40,92	60,22
3	Merbau Rambutan	1913994645,07	98276175,17	1815718470	40,53	60,13
4	Kayu Lawang Matoa Rambutan	1959896128,16	98276175,17	1861619952,99	41,53	60,25
5	Kayu Lawang Rambutan	1924344601,99	98276175,17	1826068426,82	40,76	60,12

Table 6. Average Revenue of Farmers Respondent in 1 Year

	(Rp) (1000)	(%)	(Rp)(1000)	(%)	(Rp)(1000)	(%)	(Rp)(1000)	(%)	(Rp)(1000)	(%)
Agroforestri	1.814.352	99,37	762.503	99,31	429.805	98,87	994.446	99,75	414.076	97,64
Non Agroforestri	11.500.	0,63	5.300	0,69	4.900	1,13	2.500	0,25	10.000	2,36
T o t a l	1.825.852	100	767.803	100	434.705	100	996.946	100	424.076	100

Source of Income Pattern 1 Pattern 2 Pattern 3 Pattern 4 Pattern 5

to the household income ranges from 97.64% to 99.75%. In comparison, non-agroforestry businesses contribute the most negligible revenues ranging from 0.63% to 2.36%. Community income sources outside the community forest land use agroforestry patterns derived from the Head of the Village, teachers, fishers, timber forest product processors, and Lawang wood refiners.

Based on the results obtained, generated revenue of the people in community forests business of agroforestry patterns in Village of Batulubang extensive and should be developed to be an agribusiness and bring benefits economically. It can be a reliable form of investment. On the other hand, the existence of community forests also has an impact and contribution to the regional economy in Sorong regency.

Analysis of Factors Affecting People's Income

Analysis of factors affecting the income of forest farmers of agroforestry pattern used multiple linear regression analysis using SPSS. The average probability test is taken before the multiple linear regression test is done. A regular probability test is used to analyze the respondent's data that is not normal or is outside the standard line. Thirty-two respondents continued to test the deviation of interval data through multicollinearity test, normality test, heterozygosity test, and autocorrelation test.

Testing of multicollinearity free of regression model is if VIF value (Variance Inflation Factor) around number 1 (Santoso, 2014). The results show the occurrence of multicollinearity, so it must release a not significant variable. Variables are removed one by one until the VIF number approaches 1. Based on the autocorrelation test Durbin-Watson figures obtained + 1.829, there is no auto-correlation problem in the regression model. According to Santoso (2014), if the Durbin-Watson number between -2 to +2 means there is no autocorrelation.

After multiple regression analysis in detail the results of the analysis of the factors affecting the income of farmers in Village of Batulubang can be seen in Table 7.

Based on Table 7, it can be seen that the correlation coefficient (R) obtained amounted to 0.992. This means a 99.2% correlation between revenues by eight independent variables (model 8), which has a high (significant) closeness relationship of 22 separate variables when compared to other independent variable models. Diversity (R Square) obtained is 0.985 or 98.5% of respondent's income can be explained by the regression model, the remaining 1.5% is explained by other variables not examined. The regression model has suitably fulfilled several assumptions of normality, free from multicollinearity, homogeneity, and free from autocorrelation.

Table 7. Multiple Linear Regression Analysis of Factors Affecting Farmers Revenue At Community Forest Business of Agro-forestry Patterns

Independent Variables	Regression Coefficient	P value
Planting Pattern 1	0,522	0,000
Land Area	0,239	0,000
Jumlah Tenaga Kerja	0,259	0,000
Main Occupation 2	-0,287	0,000
Secondary Occupation 5	0,189	0,000
Elementary level education	-0.072	0,028
Secondary Occupation 1	0,190	0,001
High school level education	0,077	0,020
F counting	6,213	
R	0,992	
R Square	0,985	

Sumber: Research (2016)

To know the significance between the variables X and Y on the test together, then tested through the test F. Analysis results in Table Anova note that the value of F arithmetic of 6.213, it is marked with the value of probability (P value) of the eight variables is more Small from 0.05. The value of P is 0,000 because the probability (0,000) is much smaller than 0.05. This shows that the X variable significantly in-

fluences the variable Y, that is jointly variable planting pattern 1, land area, total labour, main occupations, secondary occupations, elementary education, additional occupations and high school education significantly affect farmers income of community forest business of agroforestry patterns, thereby obtained the following regression equation: $Y = -2.470 + 0.259\ 0.522X_1 + 0.239X_2 + X_3 + 0.287X_4 + 0.189X_5 - 0.072X_6 + 0.19X_7 + 0.077X_8$

Description: Y   = Revenue
X1   = Planting Pattern
X2   = Land Size
X3   = Total Labor
D2   = Main Occupation
D3   = Secondary Occupation1
D1   = Elementary School
D4   = Secondary Occupation2
D3   = High school education

Based on a regression analysis of the variables that significantly affect the revenue of respondents as follows:

Planting Pattern

Variable cropping pattern has P value (P value) 0.000 which means that this variable have real effect to income of respondent with level of real α = 0.05. The value of coefficient of variable planting pattern has sign (+) with value 0.522 this means increase of production per one unit of time and area through increase of intensity per plant and plant type in cropping pattern I will influence earn contribution equal to 52.2%. Cropping pattern is one of the variables that can affect people's income on the people's forest of agroforestry pattern. This is in accordance with the results of economic analysis that has been described above where the income of the 5 cropping patterns significantly affect income contribution, but when reviewed per planting pattern, the highest income is in the pattern of planting I. In line with that Andayani (2005) argue that one A strategy undertaken by farmers in order to increase the output (economy) of farming land is to increase production per unit area and time through increasing intensity per plant and plant species. Technically the strategy in general intent is to farmer by way of cultivating multiple cropping system or commonly named as agroforestry pattern.

Land Area

Variable land area has a value of P value of Variable

cropping pattern has a value of P (P value) 0.000 which means that this variable significantly affect the income of respondents with the level of real α = 0.05. The coefficient value of land width variables Has a sign (+) with a value of 0.239 this means an increase of land area per unit of 1 m² will affect the income contribution of 23.9%. The more land owned by the respondents, the more types of plants can be managed and planted in the land. Thus the greater the income received by respondents.

Number of Labour

The variables of planting pattern have P value (P value) 0.000 which means that this variable have real effect to the respondent's income with the real level α = 0.05. The coefficient value of land width variable has sign (+) with value 0.259, it means if the other remain variable respondent add one worker will increase income equal to 25.9%. The labor used by farmers comes from labor from within the family and from outside the family. Based on research Putirulan *et al* (2019) labor has a positive influence on income. Labor is one of the factors affecting production, therefore the efficient use of labor will help the production process. According Dhakal *et al* (2012) the more labor used then the land management activities will be better.

Occupation

Variable of land area has value P value of Variable cropping pattern has P value (P value) 0.000 which means that this variable have real effect to income of respondent with level of real α = 0,05. The coefficient value of land wide variables has a sign (-) with a value of 0.287 this means that if other variables remain, the respondents who have the main livelihood outside the agroforestry farmers have a smaller income than the people whose main livelihoods agroforestry or in other words the income of Village of Batulubang Whose main livelihood as agroforestry farmers is 28.7% of the people whose main livelihood is not farming agroforestry. Based on the above table can be seen that the value of the coefficient of variables 5 side livelihoods have a sign (+) with a value of 0.189 and the value of coefficient of livelihood variables 1 has a sign (+) with a value of 0.190 this means the income of respondents can increase if the respondents have side livelihood .

Education

Variable land area has P value value as variable of

cropping pattern has P value (P value) 0.000 which means that this variable have real effect to income of respondent with level of real $\alpha = 0{,}05$. The coefficient value of elementary education variable has a sign (-) with a value of 0.072 and high school education has a sign (+) with a value of 0.77 this means that respondents who have elementary education will contribute a smaller income than respondents who have high school education. The level of education assessed can affect the ability of one's thinking, but the level of education is not always a factor that affects the income of respondents.

Conclusion

Agro-forestry system which is implemented in the Village of Batulubang is an Agrisilvikultur System. Majority of farmers who manage the community forests business of agroforestry patterns are at their productive age, the level of education and the land area is classified as medium level.

Factors which affected the income of the farmers are planting patterns, land area, number of labour, side job (secondary occupation), level of education .

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