Income analysis of goat farmers on the farmers group in district of Serdang Bedagai

J N Manurung, Hasnudi and T Supriana
Faculty of Agriculture, Universitas Sumatera Utara, Indonesia
E-mail: tavihutasuhut@yahoo.co.id

Abstract. The farmers group are expected to reduce the production cost of goat breeding and improve the income of farmers which impact on the welfare of goat farmers. This research aim to analyze the factors that influence the income of farmers group, in sub-district Dolok Masihul Pegajahan, and Dolok Merawan, Serdang Bedagai. The method used is survey method with 90 respondents. Data was analysed by multiple linear regression. The result showed, simultaneously goat cost, sale price of goat, fixed cost and variable cost had significant effect on income of goat farmers. Partially, goat cost, variable cost and sale price of goat had significant effect on income of goat farmers, while fixed cost had no significant effect.

1. Introduction
Livestock can be one of the stimulator of regional economic growth, even in the national. One of livestock business which has promising prospect is goat livestock business. Some benefits of raising goats business are increasing the income of rural communities, obtaining side income from goat feces which can be used for making manure. Goats have more adaptability to the environment, easier to raise it, and the capital needed is relatively small.

Goat is one type of livestock familiar with farming systems in rural areas. This is because, the size of the body is not too large, easy treatment, fast breeding, the number of children per birth is often more than one tail, short birth spacing, and growing fast. In addition, goats have a high adaptability to the conditions of a place agroecosystem. Goat can still survive in the worst environments. Goats is farmed by farmers are generally a local goat. The local goat that reproduce by both in indonesia, namely goat kacang and goat etawah uterus (PE). Besides that, there are goat another local like a goat gembong, costa, marica, jawarandu and bligon [1].

The farmers buy goat to start their business as well as to increase their income. Factors to be considered by farmers in the purchase of goats are certain superior nature such as body weight, number of children per birth, and disease endurance [2]. The quality of goat produced will determine the sale price of livestock. The better the quality then selling price will be the higher price with the higher price, the income to be obtained by farmers will also increase [3]. Income is the sum of money earned after all variable costs and fixed costs are covered. If the result of the deduction is positive, it means they will get some profit, while negative result of deduction means loss [4].

District of Serdang Bedagai is a suitable place for the development of goat because the human and natural resources are very supportive. This area has advantages as a livestock area in terms of climate and geography. This condition has been used by farmers to cultivate goats to date. The data from the Agriculture and Husbandry Office District of Serdang Bedagai which indicate the raising of the population of goats in the amount of 1,21% in 2014, from 77.161 heads become 78.106 in 2015.
Goat livestock conditions are characterized by low incomes, narrow land, lack of capital and knowledge of limited livestock breeding and farmers still tied to the main job and do the husbandry only as a side business (small-scale business i.e. an average of 3-5 goats per family). Many farmers do not have time to join groups with other farmers and still lack of farmers trust in the government, where small farmers generally prefer to raise potluck without any local government intervention. With farmers group, the production cost of goat breeding can be decreased, and the income of farmers can be increased which affect their wealth. The farmers group are farmers groups of livestock farmers. The Farmers group can be formed because of the unity of interest, especially regarding the mutual relationships that affect each other and awareness to help fellow members. The farmers group can also be formed because they want to get help from the government that can be either capital or other assistance to help increase the income of farmers. The Objective of this research is to analyze the factors that influence the income of farmers group, in sub-district Dolok Masihul Pegajahan, and Dolok Merawan, Serdang Bedagai.

2. Materials and methods
This research was conducted on July to September 2016. The selection of research area is in the District with high livestock population, that is Dolok Masihul District, District with the population of medium goat, and District Pegajahan, and District with low livestock population of goat namely Dolok Merawan District. The number of farmer respondents in the farmers group taken in this research were 30 respondents in each sub-district, so the number of respondents for the farmers group were 90 respondents.

The research method used is survey method with sampling technique which is called accidental sampling, that sample determination technique is based on spontaneity factor, meaning anyone who intentionally meet with the author and compatible with the characteristics (characteristics), then the farmers can be used as a sample (respondents). Parameters that become the object of observation in this research are the factors that influence the income of farmer like goat cost, fixed cost, variable cost and sale price of goat.

The model used in this research is multiple linear regression model which is formulated as follows:

\[ Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + \mu \]

where:
- \( Y \) = Farmers Income (Rp/year)
- \( a \) = Constants
- \( X_1 \) = Goat Cost (Rp/Year)
- \( X_2 \) = Fixed Cost (Rp/Year)
- \( X_3 \) = Variable Cost (Rp/Year)
- \( X_4 \) = Sales Price of Goat (Rp/Year)
- \( \mu \) = Error

3. Results and discussion
Based on the estimation results the factors that affect the income of farmers (Y) such as goat costs, fixed costs, variable costs and sale prices of goat are shown in Table 1 below.
Table 1. Factor Analysis Affecting Income on Farmers Group

| Model                  | Regression Coefficient | T-test | Sig.  |
|------------------------|------------------------|--------|-------|
| Model                  |                        |        |       |
| (Constant)             | 3331476                | 2.941  | 0.004 |
| Goat Cost              | -0.614                 | -4.815 | 0.000 |
| Fixed Cost             | 0.420                  | 1.129  | 0.262 |
| Variable Cost          | 0.429                  | 1.148  | 0.035 |
| Sales Prices of Goat   | 0.614                  | 4.758  | 0.000 |
| F<sub>test</sub>        |                       | 9.028  | 0.000 |
| Sig                    |                        |        |       |

Based on Table 1, the model of multiple linear regression equation in the income of farmers (Y) is:

\[ Y = 3331428 - 0.614X_1 + 0.420X_2 + 0.429X_3 + 0.614X_4 \]

Note:
- Y = Farmers Income (Rp/year)
- A = Constants
- X<sub>1</sub> = Goat Cost (Rp/year)
- X<sub>2</sub> = Fixed Cost (Rp/year)
- X<sub>3</sub> = Variable Cost (Rp/year)
- X<sub>4</sub> = Sales Price of Goat (Rp/year)
- \( \mu \) = Error

3.1. Partial Variable Effect

Partial significance test (T-test) is done to see partially (individual) effect of independent variables studied were goat cost \((X_1)\), fixed cost \((X_2)\), variable cost \((X_3)\) and sale price of goat \((X_4)\) to dependent variable which is called as income \((Y)\).

3.2. Goat Cost \((X_1)\)

In Table 1 it can be seen that t-count on the variable of the goat cost \((X_1)\) is 4.815 which is bigger than t-table which is equal to 1.991 with significance level of 0.000 \((P < 0.05)\), so it can be concluded that \(H_0\) is rejected and \(H_1\) is accepted. Therefore, it can be concluded that the cost of goat partially has significant effect on farmers income. The negative coefficient value indicates that the goat cost \((X_1)\) has negative effect (-0.614). which means that the increase of goat purchase cost of Rp 1,000. - will decrease the farmers income in the group by Rp. 614. - In Table 2, it can be seen that the goat cost that farmers are issuing with average of Rp. 5,586,563. Goats purchased by local farmers in accordance with the quality of goat purchased. Therefore, the goat cost affects farmers income in the local area. The farmers buy goats to start their business as well as increasing their income. Factors that farmers pay attention to in purchasing goats are certain superior nature such as body weight. number of children per birth. and disease endurance [2].

3.3. Fixed Cost \((X_2)\)

In Table 1, it can be seen that the t-count of fixed cost variable \((X_2)\) consisting of the depreciation cost of the cage and the depreciation cost of the equipment is 1.129 which is smaller than the t-table 1.991 with the significance level of 0.262 \((P > 0.05)\). So it can be concluded that \(H_0\) is accepted \(H_1\) is rejected. Thus it can be concluded that the fixed costs have no significant effect partially on the income of farmers. The positive value of coefficient indicates that the fixed cost \((X_2)\) has a positive effect of 0.420 which means that with a fixed cost increase of Rp 1,000. - will increase the income of farmers of Rp. 420. - It happens because the average of fixed cost that the farmer issued is large enough. that is Rp. 2,130,813 which can be seen in Table 2. The higher the cost incurred the lower
received income. so the fixed cost does not affect the income of farmers. The cost of production (fixed costs) issued in the husbandry business is related to the income obtained by farmers [5].

3.4. Variable Cost (X1)

In Table 1. it can be seen that t-count on variable cost (X1) consisting of feed cost, medicines, vehicle operation, electricity and labor wage is 1.148 which is smaller than t-table equals 1.991 with signification level equals 0.035 (P< 0.05), so it can be concluded that variable costs have significant effect partially on farmer income. The positive value of coefficient indicates that the variable cost (X1) has a positive effect of 0.429 which means that with the increase of the variable cost of Rp 1,000, will increase the income of farmers Group of Rp. 429. This is because the average of variable cost issued by farmers is big enough that is Rp. 3,419,135 which can be seen in Table 2. The higher the cost incurred the higher received income. so the variable cost affected the income of farmers.

3.5. Sales Price of Goat (X4)

In Table 1. it can be seen that t-count on the sales price of goat (X4) is 4.758 which is bigger than t-table equals 1.991 with significance level of 0.000 (P <0.05). so it can be concluded that H0 is rejected and H1 is accepted. Therefore, it can be concluded that the sales price of goat has significant effect partially on farmers income. The positive value of coefficient indicates that the variable cost (X4) has a positive effect of 0.614. which means that with the increase of sales price of goat equals Rp 1,000, will increase the income of farmers group of Rp. 614.

Farmers income are affected by Market demand and livestock prices. The price of livestock will increase when the demand for meat increases. Farmers generally sell their livestock when they need cash for their family needs. The selling price of goat applicable in the study area is based on age and sex by considering the condition of livestock, too. Goat livestock sales system is estimated from the weight of the body and the market price in general. The quality of livestock produced will determine the sales price of the livestock. the better the quality then the higher the sales price will be. With higher prices, the revenue to be gained will also increase [3].

3.6. Variable Influence Test Simultaneously (F - test)

To see whether or not the influence of the independent variable on the dependent variable, can be seen from f-count value. In Table 1, it can be seen that the value of f-count in the group is 9.028 which is greater than the f-table value equals 2.49 with the significance level of 0.000 (P <0.05). It can be knwon that, simultaneously, goat cost (X1), fixed cost (X2), variable cost (X3) and sales price of goat (X4) influence the farmers income (Y). Every increase or decrease in goat costs. fixed costs, variable costs and prices of livestock sales will simultaneously lead to increase and decrease in farmers income.

3.7. Income

Income is the difference between the income of livestock business per year with the total production cost per year, the amount of farmers income in the group, the average net income equals Rp. 5,943,555 per year can be obtained. Income is the difference between the receipt and all expenses incurred [6].

4. Conclusions

Based on the results of research obtained, simultaneously goat cost, sale price of goat, fixed cost and variable cost had significant effect on income of goat farmers. Partially, goat cost, variable cost and sale price of goat had significant effect on income of goat farmers. while fixed cost had no significant effect

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