Evaluation of Good Agricultural Practices in Shallot (Allium ascalonicum L.) Farming

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ABSTRACT

The climate change is a process that occurs dynamically and continuously. Therefore, the strategy of anticipation and the preparation of adaptation technology become one of targets of "Agriculture Development" in the effort of developing the agriculture that is resistant (resilience) to the climate change. The research was conducted in Pabedilan Kaler Village, Pabedilan Subdistrict, Cirebon Regency which involved 36 people. The method used was Survey method. The result shows that: (1) the average of total cost of shallot farming applying GAP is IDR 68.551.615/ha, and non-GAP is IDR 75.158.730/ha with the inflow average is IDR 172.156.614/ha for those which applied GAP, while the non-GAP is IDR 105.250.088/ha, and the income average is IDR 103.604.999/ha for those applying GAP, while non-GAP is IDR 30.091.358/ha., (2) the expedience of shallot farming is viewed from the average value of R/C ratio as 2.54 and B/C ratio as 1.51for those applying GAP, while the non-GAP R/C ratio is 1.4 and B/C 0.4. BEP of farmers' price who applied GAP is IDR 6.902/kg, while the non-GAP is IDR 12.536/kg. The BEP average of the production per ha for GAP group is 3.954 kg/ha while the non-GAP group has BEP of production as 4.281 kg/ha..

Keywords: farming, shallot, gap.

I. INTRODUCTION

The climate change is a process that occurs dynamically and continuously. Therefore, the strategy of anticipation and the preparation of adaptation technology become one of targets of "Agriculture Development" in the effort of developing the agriculture that is resistant (resilience) to the climate change [1].

Shallot is one of superior commodities which is prioritized in the planning of the development, manufacture and marketing of farming crops in periods 2015-2019. The development planning of shallot agribusiness prioritizes the post-harvest treatment and processing to increase the plus value [2]. Although the price in market often fluctuates sharply, the shallot farming still becomes farmers' mainstay (especially in dry season) and produces sufficient profit. Shallot demand keeps increasing, not only in the domestic market but also has an opportunity to be exported [3].

One of the centres of shallot farming in West Java is Cirebon Regency precisely in the eastern of Cirebon Regency. The lowland area ofthe eastern coast of Cirebon is a very specific area, because this area is located on the border between land and sea influences. So it can be said that the area is ideal to increase the productivity of shallot as a superior commodity.

The use of appropriate technology in the cultivation of crops can increase the productivity of plants produced [4], so the technology used not only aims to increase the quantity regardless of the quality of the commodity itself, thus impacting the sales price (market demand) which at this time consider the quality of horticultural commodities.

Many farmers are able to manage their business well but do not have sufficient capital, but there are also farmers who have a lot of capital cannot manage their business properly. This causes the expedience level of farming to be low. Generally, farming expedience is valuated from the ratio of the expense and the income of the product [5]. It impinges low production costs to produce high productivity, so farmers' inflow is also high. The ratio of inflow and production cost is the Revenue and Cost ratio (R/C ratio) [6].

One solution to overcome this problem is the implementation of cultivation based on GAP (Good Agriculture Practices) and SOP (Standard Operating Procedure)[7]. GAP is a guide in doing good farming so the technology is used appropriately and the cost is low without reducing the productivity and quality of the commodity. While SOP is a parameter (reference of standardization) of farmers in conducting cultivation to qualify that farming has been carried out based on GAP [8]. Based on the above description, it is necessary to conduct research on expedience of shallot farming that already implement and have the credibility of GAP in Cirebon Regency precisely in the Pabedilan region as the location of this research.

II. RESEARCH METHOD

The method used is the census method [9].The research was conducted in Pabedilan Kaler Village, Pabedilan Sub-district, Cirebon Regency. The data were obtained through direct interviews (using questionnaires) and literature review techniques. The data analysis used descriptive analysis. The determination of census respondent that is 36 people consisted of GAP 18 and Non GAP 18 respondents. Data were obtained through primary data and secondary data, the data collected were analyzed in accordance with the objectives of the research to determine the expedience of shallot farming using the analysis of inflow ratio (R/C ratio) [10]. Break Even Point (BEP) and the benefit of incremental cost (B/C ratio) [11].

III. RESULTS AND DISCUSSION

3.1. Analysis of shallot farming using GAP and non-GAP

The cost of shallot farming is divided into fixed costs and non-fixed costs. Expenditure or expense is the entire sacrifice of economic resources in the units of money (rupiah) required to produce the product within a production period [12]. Non-fixed costs are all costs spent to produce a commodity or product either in cash or in account. The cost component used in shallot farming is the cost of seeds purchasing, fertilizers, pesticides, and labor. While fixed costs are unchanged costs that do not affect substantially productivity such as regular taxes and irrigation costs or land-use costs.

To compare the average cost per ha both GAP and non-GAP can be seen in table 1 below:

Table 1. The average cost per ha for GAP and non-GAP

Cost	**Non-GAP (IDR/ha)**	**GAP (IDR/ha)**
Variable Cost		
Seed	49.742.083	37.923.203
Fertilizer	6.271.705	4.225.397
Pesticide	5.842.696	4.292.923
Labor	8.156.281	18.225.123
Total A	70.012.765	64.666.646
B. Fixed Cost		
Tax	0	0
Levy	100.000	100.000
Land rent	5.045.965	3.784.969
Total B	5.145.965	3.884.969
Total (A+B)	75.158.730	68.551.615

Source: Analysis 2017

In this study the average of non-fixed cost per hectare for shallot farming using GAP is IDR 64.666.646 with an average of fixed cost per hectare is IDR 3.884.969 and the average of total cost is IDR 68.551.615 while for non-GAP farmers the average cost per hectare is IDR 75.158.730 with an average of fixed cost per hectare is IDR 5.145.965 with total cost IDR75.158.730. So it results cost comparison between GAP and non-GAP is the difference in cost as IDR 6.607.115 which means that GAP is more efficient than Non GAP.

3.2.The inflow of shallot farming using GAP and non-GAP

Revenue farming is the total value of the product produced, which is the result of multiplication between physical outputs with the selling price that occurs. The farmers' inflow from shallot production in 2017 can be seen in table 2.

Table 2. The inflow average of farming shallot per ha

Technology	**Harvest amount (Kg/Ha)**	**Selling price (IDR/Kg)**	**Inflow (IDR)**
GAP	9.932	17.333	172.156.614
Non-GAP	5.995	17.556	105.250.088

Source: Analysis 2017

Based on the Table, the average amount of inflow per hectare received by shallot farming on respondent

farmers in Pabedilan Kaler village that has applied GAP is IDR 172.156.614 with the average production per hectare is 9.932 kg/ha, while farmers of non-GAP have average inflow as IDR 105.250.088 with an average production is 5.995 kg/ha. It can be said that the average production and inflow of farmers who have applied GAP is superior rather than non-GAP.

3.3. Analysis of farming income, R/C ratio and B/C ratio

Farming income is said to be profitable if the difference between revenue and expenditure is positive. Revenue on total cost (non-fixed cost + fixed cost) is derived from a reduction in total revenue by total expenditure. Average total surpluses on total cost received, total revenue analysis (R/C) and total profit (B/C) analysis in shallot farming applying GAP and non-GAP in Pabedilan Kaler village per hectare can be seen in table 3.

Table 3. The average of shallot farming income per ha

Technology	Inflow (IDR)	Total cost (IDR)	Income (IDR)	R/C	B/C
GAP	172,156,614	68,551,615	103,604,999	2.51	1.51
Non-GAP	105,250,088	75,158,730	30,091,358	1.4	0.40

Source: Analysis 2017.

From table 3 it can be seen that the average per hectare of farmers applying GAP can generate income as IDR 103.604.999 from the cost of IDR 68.551.615 with a value of R/C is 2.51. While non-GAP farmers get profit as IDR 30.091.358 from production cost of IDR 75.158.730 with value of R/C is 1.40. It indicates that shallot cultivation applying GAP is superior because by using capital IDR 1 will get IDR 2.51 which means profit almost 2 times capital, while non-GAP only gets difference of IDR 0.40 from capital IDR1 to IDR 1.40. While the result of B/C analysis shows that farmer group applying GAP has advantage over capital with B/C value is 1.51, while for non-GAP farmer only gets profit with value less than total cost with B/C value 0.40. It is very clear from the results of this analysis that the group of farmers who apply GAP is superior, GAP farmers advantage is due to the efficiency in the non-fixed cost and the production that is larger than non-GAP.

3.4. Analysis of BEP price and BEP production

The analysis of Break Even Point price (BEP Price) is an analysis of farming to find out how much the breakeven price of capital in case of price decline so that farmers know the right price to get profit from their business [13], in table 4 average BEP price of farmers applying GAP isIDR 6.902 per kg, while non-GAP farmers is IDR 12.536 per kg. This value means if the farmers want to get a profit then the selling price of their products must exceed the break even price (BEP price), if the farmers sell the shallot production below the price so they will experience losses. To see the average of BEP Price and Production of GAP and Non-GAP Farmers is presented in Table 4.

Table 4. The average of BEP price and production of GAP and non-GAP farmers in Pabedilan Kaler Village, Cirebon Regency

No	Explanation	Technology	
		GAP	**Non-GAP**
1	Production (Kg/Ha)	9,932	5,995
2	Price (IDR)	17,333	17,556
3	Total Inflow (IDR)	172,156,614	105,250,088
4	Total Cost (IDR)	68,551,615	75,158,730
5	BEP Price (IDR)	6,902	12,536
6	BEP Production (Kg/Ha)	3,954	4,281

Source: Analysis 2017

While the analysis of the breakeven point of production (BEP Production) is a farming analysis to find out how much production to breakeven the capital so that farmers can target by increasing the optimization of technology for productivity beyond the breakeven point of production (BEP Production) [13]. In table 4 the average of BEP Production per ha for GAP group is 3,954 kg/ha whereas BEP production of non-GAP group is 4,281 kg/ha. From this result, it can be interpreted that GAP farmer group still gets benefit if its production is not covered by this non-GAP farmer group, while non-GAP farmer group will suffer huge losses if their future production is on the farmers' production that applies GAP.

3.5. Analysis of t-test hypothesis

To compare the R/C of shallot farming that has applied GAP and non-GAP so it used the t-test with formulation as follow:

$$t = \frac{X1 - X2}{\sqrt[2]{s^2\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}} s^2 = \frac{(n1-1)s1^2 + (n2-1)s2^2}{n1 - n2 - 2}$$

The result of calculation (see attachment 4) shows that t_{stat} is bigger than t_{crit} = 3.12 t_{stat} > 1.74 t_{crit} which means that H_0 is rejected and H_1 is accepted. If H_1 is accepted so it means that there is difference in the income between shallot farming which applied GAP and non-GAP. The difference in farming income between GAP and Non-GAP is seen from the R/C ratio analysis between shallot cultivation which applied GAP and non-GAP. R/C ratio becomes reference to be analysis material of t-test since R/C is the indicator of expedience value of farming that is carried out [10].

IV. CONCLUSION AND SUGGESTION

4.1. Conclusion

a. The amount of cost, inflow and income of shallot farming in Pabedilan Kaler village is as follow:
   - The average of total cost per ha of shallot farming which applies GAP is IDR68.551.615, while the non-GAP is IDR 75.158.730.
   - The average of total inflow per ha of shallot farming which applies GAP is IDR172.156.614, while the non-GAP is IDR105.250.088 (cultivating season in February - March 2017)
   - The average of total income per ha of shallot farming which applies GAP is IDR103.604.999, while the non-GAP is IDR 30.091.358.

b. Shallot farming which applies GAP has higher expedience with the average of R/C is 2.51 and B/C is 1.51, while the non-GAP is expedience but not too optimal with the value of R/C is 1.4 and B/C is 0.4.

4.2. Suggestion

a. The shallot farmers should keep the quality using GAP technology which is applied so the product produced is optimal and they should persuade the other farmers who have not yet applied GAP.

b. The government can overspread and give information evenly to the non-GAP farmers to apply GAP so it can increase the productivity of shallot in Cirebon Regency.

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