

# Impact of Agrotourism Development on Increasing Value Added of Agricultural Products and Farmers' Income Levels (A Study in Karangtengah, Bantul, Yogyakarta)

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**Abstract.** This study examines the impact of agro tourism development on increasing the value added of agricultural products, and the impact of agro tourism development on farmers income level. The study was conducted using survey interviews with farmers and related parties and field observation. The development of agro tourism encourages the community to process agricultural products, improve on farm and non-farm management. The results showed that processing of agricultural products, farm management and non-farm management activities provides significant increase on farmers household income. It is recommended to optimize the processing of agricultural products, farm management and non-farm management activities.

## 1 Introduction

Sustainable development is a process that has economic, social, cultural and environmental-ecological dimensions. This process is considered a development in all respects for both urban and rural communities. However, in most developing countries, the rural population is decreasing, while agricultural land is losing its productivity. This situation is a major cause of increasing poverty in rural communities, as well as causing problems such as loss of deforestation, erosion and productivity by misuse of natural resources. Issues and challenges that faced by the farmer are small size farm lands, and poor [1]. On the other hand, the destruction of natural resources creates problems such as migration, poverty and hunger [2].

Agriculture-based rural area development is increasingly being promoted in various regions. This activity is to develop the potential in rural areas, which during the previous period have experienced imbalances in development areas. In the past, development was prioritized for urban areas, so that rural areas were lagging behind in all sectors, particularly in the agricultural sector. Even though the agricultural sector is very dominant in rural areas. Symptoms of this imbalance include many rural young people who try their luck in urban areas, resulting in neglect in the rural labor sector [3]. Limited land causes inefficient

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small scale farms so that farmers' income is low. This condition can reduce the motivation of rural communities to work in the agricultural sector.

To anticipate and develop rural areas, the government is now intensifying rural social and economic development, including rural agribusiness development and rural agrotourism programs. Tourism is as one of the largest economic sectors and has the fastest growth, there is an assumption that this sector became the main driver of economic growth in the world [4]. The purpose of agro-tourism is to increase the necessities of life, create jobs and increase development in rural areas both economically and socially [5, 6, 7]. Agrotourism should be an integrated part of government programs that aims to introduce and improve the welfare of rural communities [8]. Agrotourism is one form of tourism that consists of agricultural products, with a variety of recreational facilities which can reduce the tide of urbanization and advance the economy of rural communities [9]. Rural tourism is primarily a way of solving social problems of the village and supporting farmers [10]. Agro-tourism is a catalyst for economic growth and income supplement [11]. The development of rural agribusiness is intended to increase the added value of agricultural products so that it can be expected to increase farmers' income. Meanwhile, agrotourism is one way of developing agriculture in rural areas, with a background of several constraints on the development of large-scale agricultural sectors, and the potential for rural areas that are attractive to tourists. The main obstacle for rural areas to develop a large-scale agricultural sector is that the land ownership conditions for most farmers are very narrow and most of them are poor farmers. On the other hand, it turns out that rural areas have very interesting potential to be developed with agrotourism through the potential of agro-ecosystems, especially those concerning natural authenticity, the variety of agricultural commodities, the uniqueness of customs, arts and culture. The village has great potential in the application of agro-tourism [12]. The condition of this typical rural area varies greatly from region to region, so that it can attract tourists [13]. This condition is also owned by Karangtengah Village, Imogiri Subdistrict, Bantul Regency, which is being developed as an agrotourism area so that it is ranked as the third national hope for a tourism village in 2014. This potential is being seriously developed so that besides being able to improve the welfare of the farmers, especially farmers, also to become a pioneer in developing agrotourism in other areas that have not been touched or handled.

Broadly speaking, this village area is very attractive to be developed because it holds various potentials that can be sold to tourists. The location of Karangtengah village is located on the tourist route from downtown Yogyakarta to the tomb of Mataram kings. The agricultural land in Karangtengah Village is dominated by rice and horticultural crops, and almost all communities have rice fields because of the available irrigation channels and fertile soil conditions. Besides rice farming, community farming has also developed in the fields of fisheries, animal husbandry, and processing livestock waste into organic fertilizer and organic farming has developed. Agricultural product processing businesses have been developed in the form of handicraft and culinary home industries. The development of agrotourism by involving local culture and wisdom in agriculture and land management can increase local economic income [14]. Agro-tourism development creates new jobs together with the emergence of the home industry [15].

The social conditions of the community are enthusiastic about developing rural areas, especially for the development of agrotourism, and indeed so far have been frequently visited by domestic and foreign tourists. Government institutions and farmer groups are very supportive of the development of agrotourism because this area is one of the agropolitan development areas of Bantul Regency.

However, the existence of this potential for agrotourism still needs to be developed considering the number of tourists / visitors is still lower than other areas in the tourist area route in the Special Region of Yogyakarta. Tourist visits in Bantul Regency are still

dominated by the coastal area, especially Parangtritis beach. Meanwhile, tourism revenue in Bantul Regency in 2010 only reached 5.41% [16]. Based on the above problems, it is necessary to conduct a more in-depth study of how the impact of agrotourism development on the income of the farming community.

This study aims to (1) determine the impact of agrotourism development on increasing the added value of agricultural products, and (2) determine the impact of agrotourism development on farmers' income levels.

## 2 Research method

Descriptive research [17, 18, 19, 20] regarding the impact of agrotourism development on the increase in the added value of agricultural products and the income level of farmers. to farmers / agribusiness actors and parties with an interest in agrotourism as research objects. The center for agrotourism development in Imogiri District, Bantul Regency is Karangtengah Village. Karangtengah village is a tourism village that has received an award as the third runner up for the 2014 national tourism village [21]. Karangtengah village consists of six dukuh areas. Most of the residents' livelihoods are farming and home industry. Samples of farmers / agribusiness actors were taken from each hamlet by proportional random sampling. Data were collected by means of observation and interviews with a questionnaire guide. Observations are made to areas that have the potential or support agrotourism, which include gardens, housing for farmers, yards, agriculture (farming), home industries, irrigation waterways, production units, lodging, parking areas, road conditions and so on. To get deeper information, a Focus Group Discussion (FGD) was conducted with farmer groups, community leaders and the government.

The data processing technique that will be used is by using inductive techniques, namely from facts and events that are known concretely, then generated into a general conclusion based on empirical facts about the research location. Moloeng [22] says that by using inductive analysis, it means that data search is not intended to prove the hypothesis that has been formulated before the research is carried out. To determine the socio-economic impact of the farming community, the analysis uses an analysis of income and added value.

**Table 1.** Value added calculation format.

Variables	Symbol
Raw material (kg/month)	a
Raw material price (IDR/kg)	b
Product (unit/ month)	c
Conversion factor	$c/a = h$
Average product price (IDR/unit)	d
Labour (HOK/ month)	e
Labour coefficient	$e/a = i$
Average salary (IDR/HOK)	f
Other input (IDR/kg raw material)	g
Product value (IDR/kg)	$h \times d = j$
a. Value added (IDR/kg)	$j - g - b = k$
b. Value added ratio	$k/j \times 100\% = l \%$
a. Employee benefits (IDR/kg)	$i \times f = m$
b. Employee share	$m/k \times 100\% = n \%$
a. Profit (IDR/kg)	$K - m = o$
b. Profit level	$o/j \times 100\% = p\%$

Source: [23]

The impact of agrotourism development on the income of the farming community can be seen from the increase in the added value of agricultural products and the level of income of the farming community (household income). The added value of the tourism agro-industry can be analyzed using the added value analysis format as in table 1.

Community income or farmer household income is total income obtained from farming, agricultural processing business and outside farming. Farming income and agricultural processing are calculated based on cost and income analysis. It can be determined using the following formula:

a. Cost

Total costs (TC) are total implicit costs plus explicit costs as shows in the following formula:

$$TC = TIC + TEC$$

Information:

TC = Total cost

TIC = Total implicit cost

TEC = Total explicit cost

b. Income

In calculating the income that has been achieved by rice farmers, it can be calculated by the formula:

$$NR = TR - TEC$$

Information:

NR = Income

TR = Receipt

TEC = Explicit cost

c. Total family income (farmer household) = farm income + farm processing income + non-agricultural income

### 3 Results and discussion

#### 3.1 Agricultural Products Value Added (Industrial Income).

##### 3.1.1 Tempe Production Costs

**Table 2.** Average Tempe Production Costs

Variables	Soybean capacity (Kg)	
	Monthly (480 Kg)	Annually (6.480 Kg)
1. Costs (IDR)		
- Soybean	3,840,000	51,840,000
- Additional ingredients	1,359,360	18,351,360
- Depreciation	129,396	1,746,846
- Labor	0	0
Total	5,328,756	71,938,206
1. Costs (%)		
- Soybean	72.06	72.06
- Additional ingredients	25.51	25.51
- Depreciation	2.43	2.43
- Labor	0.00	0.00
Total	100.00	100.00

Source: Primary Data Analysis, 2020

Production costs are costs incurred by craftsmen in the production process. In this tempe industry, the costs used include the costs of production facilities, labor costs, and equipment depreciation costs. These costs can be seen in table 2.

Table 2 shows that soybean raw material production facilities have the largest percentage compared to other production facilities such as additional materials, depreciation costs, labor costs, which is 72.06% while the smallest percentage of costs is the cost of labor outside the family of 0.00%.

### 3.1.2 Tempe Revenue and Income

Revenue is the amount of production multiplied by the selling price of the output unit. Meanwhile, income is all revenue obtained from the production of tempe after deducting the production costs. To find out the revenue and income of the tempe industry can be seen in table 3.

**Table 3.** Average Revenue and Income of Tempe Industry

Description	Soybean Capacity (Kg)	
	Monthly (480 Kg)	Annually(6.480 Kg)
1. Production (seeds)	24,000	324,000
2. Price per seed (IDR)	250	250
3. Revenue (IDR)	6,000,000	81,000,000
4. Production cost (IDR)	5,328,756	71,938,206
5. Income (IDR)	671,244	9,061,794

Source: Primary Data Analysis, 2020

Table 3 shows that the average revenue per month from the tempe industry is IDR 6,000,000, while the annual revenue is IDR 81,000,000. Meanwhile, the average income per month is IDR 671,244 and the annual income is IDR 9,061,794. Although the annual income is IDR 9,061,794, - but it employs 3 family workers, so that the income per person is IDR 3,020,598-. per year or IDR 251,717, - per month.

### 3.1.3 Production Cost of Kepok Banana Criping

Production costs are costs incurred by craftsmen in the production process. In this Kepok banana criping industry the costs used include the costs of production facilities, labor costs, and equipment depreciation costs. These costs can be seen in table 4.

**Table 4.** Average Production Costs of Kepok Banana Criping

Description	Cost	
	Monthly	Annually
1. Costs (IDR)		
- Kepok banana	12,000,000	144,000,000
- Additional ingredients	4,053,600	48,643,200
- Depreciation	269,166	3,229,992
- Labor	4,500,000	54,000,000
Total	20,822,766	249,873,192
2. Costs (%)		
- Kepok banana	57.63	57.63
- Additional ingredients	19.47	19.47
- Depreciation	1.29	1.29
- Labor	21.61	21.61
Total	100.00	100.00

Source: Primary Data Analysis, 2020

Table 4 shows that the production facilities for the raw material for Kepok banana have the largest percentage compared to other production facilities such as additional materials, depreciation costs, labor costs, which is 57.63% while the smallest percentage cost is the depreciation cost of 1.29%.

### 3.1.4 Kepok Banana Criping Income and Income

Revenue is the amount of production multiplied by the selling price of the output unit. Meanwhile, income is all the revenue obtained from the production of Kepok banana criping after deducting the production costs. To find out the revenue and income of the Kepok banana criping industry, it can be seen in table 5.

**Table 5.** Average Revenue and Income of Kepok Banana Criping

Description	Monthly	Annually
1. Production (seeds)	550	6,600
2. Price per seed (IDR)	42,000	42,000
3. Revenue (IDR)	23,100,000	277,200,000
4. Production cost (IDR)	20,822,766	249,873,192
5. Income (IDR)	2,277,234	27,326,808

Source: Primary Data Analysis, 2020

Table 5 shows that the average revenue per month from the Kepok banana criping industry is IDR 23,100,000, while the annual revenue is IDR 277,200,000. Meanwhile, the average income per month is IDR 2,277,234 and IDR 27,326,808 per year.

### 3.1.5 Added Value of Tempe and Kepok Banana Criping

To calculate the added value of soybeans to tempe, and kepok banana to criping of banana criping on a home industry scale in Karangtengah village, it is necessary to know the value of the inputs that support the production of tempe and kepok banana criping, except for the labor value of the maker. The added value of the tempe and kepok banana criping industry in Karangtengah Village can be seen in table 6.

**Table 6.** Added Value of Tempe and Kepok Banana Criping

Description	Value-added	
	Tempe	Kepok Banana Criping
1. Raw material (kg / month)	480	600
2. Raw material prices (IDR / kg)	8,000	20,000
3. Yield (kg / month)	2,000	550
4. Conversion factor	50	0.917
5. Average product price (IDR / unit)	250	42,000
6. Other inputs (IDR / kg of raw material)	2,832	6,756
7. Product value (IDR / kg)	12,500	38,514
8. Added Value (IDR / kg)	1,668	11,758
9. Value added ratio	13.34 %	30.51 %

Source: Primary Data Analysis, 2020

Table 6 shows that the added value of processed soybeans into tempe on a home industry scale in Karangtengah Village is IDR 1,668 for every 1 kg of raw material with a value added ratio of 13.34%, it is meant that every IDR 100, - the value of the product obtained will be generate added value of IDR 13.34, -. Meanwhile, the added value of processed Kepok bananas into Kepok banana criping on a home industry scale in Karangtengah Village is IDR obtained will produce an added value of IDR 30.51, -. Of the

two home industries, processing Kepok bananas into Kepok banana criping provides greater added value, this is because the Kepok banana criping industry is a home industry product with high economic value.

### 3.2 Farming income

#### 3.2.1 Farming Costs

Farming is an economic activity that requires production costs so that the production process can take place. The size of the production is influenced by the size of the production costs used. The amount of production costs is influenced by the number of inputs and the price of the input unit. Production costs calculated in this study include land rental costs, depreciation costs, purchase of seeds, fertilizers, chemical pesticides for pest control, labor costs, and other costs. There are various varieties of rice seeds planted by farmers, including mentik wangi, sinta nuriya, and pandan wangi. The amount of seed used by farmers is an average of 40 kg per hectare.

**Table 7.** Average Cost of Rice Farming

Average cost	Rice I (IDR)	Rice II (IDR)	Total	
			(IDR)	%
Farming (1950 M <sup>2</sup> )				
Seed	61,400	61,400	122,800	1.94
Fertilizer	351,386	351,386	702,772	11.11
Pesticide	20,109	20,109	40,218	0.64
Workers outside the family	1,071,505	1,071,505	2,143,010	33.86
Workforce in the family	1,222,333	1.222,333	2,444,666	38.64
Etc			728,132	11.51
Depreciation			145,409	2.30
<b>Total</b>			<b>6,327,007</b>	<b>100.00</b>
Per Hectare				
Seed	314,872	314,872	620,744	1.94
Fertilizer	1,801,979	1,801,979	3,603,958	11.11
Pesticide	103,123	103,123	206,246	0.64
Workers outside the family	5,49,897	5,494,897	10,989,794	33.86
Workforce in the family	6,268,374	6,268,374	12,536,758	38.64
Etc			3,734,010	11.51
Depreciation			745,687	2.30
<b>Total</b>			<b>32,446,187</b>	<b>100.00</b>

Source: Primary Data Analysis. 2020 year.

\*) For polowijo plants when the research was not yet produced

The types of fertilizers used by farmers for rice farming include organic fertilizers, namely manure, and inorganic fertilizers which include Urea, TSP, NPK, KCL, ZA, Liquid Granula and POSKA fertilizers. The amount of fertilizer used by farmers on average for manure is 2,750 kilograms per hectare, Urea fertilizer is 75 kilograms per hectare, TSP fertilizer is 150 kilograms per hectare, NPK fertilizer is 150 kilograms per hectare, KCL fertilizer is 80 kilograms per hectare, ZA fertilizer is 100 kilograms per hectare, liquid Granula fertilizer is 90 liters per hectare, and POSKA fertilizer is 70 kilograms per hectare. Nearly 90 percent of farmers cultivate rice farming using organic fertilizers, 25 percent Urea fertilizer, 60 percent TSP fertilizer, 2 percent NPK fertilizer, 35 percent KCL fertilizer, 40 percent ZA fertilizer, 30 percent liquid Granula fertilizer and 30 percent POSKA fertilizer. Meanwhile, the pesticides used by farmers to tackle rice pests include Score, Recotd, and Puradan. Nearly 40 percent of farmers cultivate rice farming using pesticides.

The labor used for rice farming comes from within the family and outside the family, of the total labor required 55 percent comes from within the family. This labor is used for nursery, soil processing, planting, weeding, fertilizing, eradicating pests, irrigation, harvesting and post-harvesting. The largest amount of labor required for rice farming is for soil processing and weeding. While other costs include the cost of salvation, taxes, sakap, irrigation, land rent, gasoline, diesel and bawon rental.

Based on table 7, it shows that the production cost per hectare for rice farming during the two planting seasons is IDR 32,446,187. The largest production cost is the cost for labor both outside the family and within the family. The smallest production cost is the cost of using pesticides, which is IDR 206,246 per hectare or about 0.64 percent, the small cost of pesticides because farmers only use pesticides when there are pests.

### 3.2.2 Farm Income

Rice farm income can be calculated from the difference between income and farm costs, except for labor costs in the family. Revenue, costs and income of rice farming during the two planting seasons can be seen in table 8. Based on table 8, it is known that the income obtained by farmers from rice farming during the two planting seasons is IDR 25,622,432 per hectare. Farmers sell their produce mostly in the form of grain and partly in the form of rice. The price of unhulled rice ranges from IDR 3,750 to IDR 4,100 per kilo gram, while the price of rice ranges from IDR 8,750 to IDR 9,750 per kilo gram.

**Table 8.** Average Revenue, Cost and Income of Rice Farming

Description	Grain / Rice
Farming (1950 M <sup>2</sup> )	
Revenue (IDR)	8,878,713
Cost (IDR)	3,882,341
Income (IDR)	4,996,372
Per Hectare	
Revenue (IDR)	45,531,861
Cost (IDR)	19,909,429
Income (IDR)	25,622,432

Source: Primary Data Analysis, 2020

### 3.2.3 Outside farming income

Outside farm income is in the form of yard products consisting of bananas, cashew seeds, manga, coconut, and home stay. Outside farm income for one year can be seen in table 9. Based on table 9, it is known that the income earned by farmers from outside the farm for a year is IDR 1,455,000. The biggest income outside the farm is from the effort to rent out rooms for tourists, both foreign and domestic tourists. An income of IDR 750,000 came from 60 respondents who rented rooms for tourists. Meanwhile, the smallest income outside of farming is from mangoes, this is because there are not many farmers who grow mangoes.

**Table 9.** Outside Farming Income

Income Type	IDR
Cashew Seeds	300,000
Banana	180,000
Mango	75,000
Coconut	150,000
Home Stay	750,000
Total	1,455,000

Source: Primary Data Analysis, 2020

### 3.2.4 Farmers' household income

Farmers' household income is the farmer's household income earned and generated for one year. Farmers' household income consists of product processing or home industry income, farm income, and non-farm income. Home industry income is the income obtained from the processing of agricultural products. The industry in Karangtengah Village consists of processing kapok banana into Kepok banana criping, and soybeans into tempeh. Farming income is the income earned by a farmer household for one year, which includes season I rice farming and season II rice farming. Meanwhile, the farmer household income that comes from outside the farm includes home stay and yard business which consists of mango, banana, coconut and cashew products. For more details on farmer household income, see table 10.

**Table 10.** Farmers Household Income

Activities	Income	
	IDR	%
1. Home Industry		
a. Tempe	9,061,794	24.90*
b. Kepok Banana Criping	27,326,808	75.10*
Total	36,388,602	84.94**
2. Farming	4,996,372	11.66**
3. Outside Farming	1,455,000	3.40**
Total	42,839,974	100.00

Source: Primary Data Analysis, 2020

\*Percentage of Result Processing Income

\*\* Percentage of Household Income

Table 10 shows that the largest household income for farmers comes from processing or home industry at 84.94 percent. The biggest household income from product processing or home industry comes from product processing or home industry of Kepok banana criping, this can happen because in Karangtengah Village, many kepok bananas grow. Meanwhile, tempeh is a daily staple requirement for households both for cooking spices and as a side dish. Some are even now being processed into tempeh kripiik. Table 10 also shows that the smallest household income comes from outside farming income from banana, mango, coconut, cashew and home stay.

## 4 Conclusion and Recommendation

### 4.1 Conclusion

After discussing the results, it can be concluded that the existence of agrotourism or Karangtengah Village has an impact on:

- a. The emergence of home industries for processing agricultural products such as soybean processing industry on making tempe, and industrial processing of Kepok banana chips, which in turn would increase farmers household income. Home industries that process farm products can increase farmers' income [11].
- b. More intensive farming management to support agrotourism activities which in turn would increase farmers' production and farming income.
- c. More intensive management of yards to support agrotourism activities which in turn would increase farmers' income from land management.

## 4.2 Recommendation

Based on the results, this study recommend to the government, especially the Agriculture and Industry Agency of Bantul Regency, to provide more motivation, training, and assistance in a comprehensive and sustainable manner, both in the field of farm management and home industry management. Community really needed assistance both in the field of planning, development and management of agritourism [24].

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