ANALYSIS OF AGRICULTURAL PRODUCTIVITY AT TIDAL LOWLANDS

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ABSTRACT

This study aimed to analyze of the agricultural productivity in the area reclaimed tidal marsh. The location of research is reclaimed tidal delta region Telang I Primary 8 representing land typology A / B and the survey was conducted at 13 South Secondary scheme following tertiary in Telang I.

To assess of the agricultural productivity, has conducted a survey of farmers who are farming in the scheme of P8-13S Telang Karya Makmur District of Banyuasin. Each farmer respondents interviewed in person using a questionnaire. Based on the analysis of the survey data, successively presented the results of a study on the use of farm production factors, productivity and the factors that influence the stability of the channel including the effect on productivity.

The results showed the following matters:

a. Production factors influence together with the rice farming income with determinant coefficient (R^2) of 0.806 , This mean. the five factors of production can be explained 80.6 percent of the variation in rice farming income. But individually, only the factors of production are land and channel stability significantly affect rice farming income.
b. Production factors of land has a regression coefficient of 0.387, This means that each increment 1 hectare rice farm would potentially provide additional income of Rp . 387,000 , - when other production factors are considered permanent.

Keywords : Agricultural productivity, factors of production, farm income

Introduction

Indonesia has the potential land for agriculture area of approximately 162.4 million ha, most of the potential land consists of swamp areas covering 33 393 million ha, divided into 20 097 million ha of tidal marsh and 13 296 million ha of lowland swamp scattered on the island of Sumatra, covering 9:37 million ha , Kalimantan area of 11 707 million hectares, an area of 1,793 million ha Sulawesi and Papua, an area of 10 522 million ha. Swampy area that has been reclaimed by the government has reached 1.8 million ha by the private and public sectors around 2.1 million hectares for a total of 3.9 million hectares, but land productivity achieved is still low at an average of 3 tons / ha. This is due to a lack of attention to the Operations and Maintenance (O&M) where the activities carried out at this time is limited to micro scale, namely the maintenance carried out on the initiative of farmers in tertiary channels without building doors valve.

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Study data inventory marsh area western region and the eastern region, we concluded that of the total area of reclaimed swampland that there are 1.8 million ha 0.8 million ha of swamp land abandoned or unused land. The land is caused by many things, including the network of existing water system is less than optimal, because the flow of the existing system is not appropriate. In addition, the channel conditions and waterworks also has not been rehabilitated plus-optimal channel maintenance both on a micro and macro water system.

Stability of channel have been conducted with various model scenarios Operation & Maintenance (O & M) produced a prototype in the stable channel tidal marsh area. Channel stability alleged impact on agricultural productivity. Therefore, according to the research objectives influence the stability of the channel on rice production, analysis is needed to prove whether the stability of the channel effect on agricultural productivity.

Criteria stable is no erosion and sedimentation in the channel with the channel condition of equilibrium. Although erosion and sedimentation, but it is merely a momentary material movements on the channel does not affect the general condition of the channel. To assess the effect of the channel on the productivity of agriculture, has done a survey of 50 farmers to farm in the P8-13S scheme Telang Karya Makmur District of Banyuasin. Each farmer respondents were interviewed in person using a questionnaire. Based on the analysis of the survey data, successively presented the results of a study on the use of farm production factors, productivity and the factors that influence the stability of the channel including the effect on productivity.

Material and Methods

Experimental site Layout

This research was conducted in the Delta region Telang I, which is a swampy area in the province of South Sumatra, also reclaimed the second generation following the double-grid design layout (Rib System) along with Telang II, Delta Saleh and Sugihan. (Bogor Agricultural Institute, 1976). The next design for an open channel system is prepared by the Institute of Technology Bandung (ITB). The system consists of a main line (also used for navigation), secondary channels and tertiary channels. (Figure 1. Map of the research location

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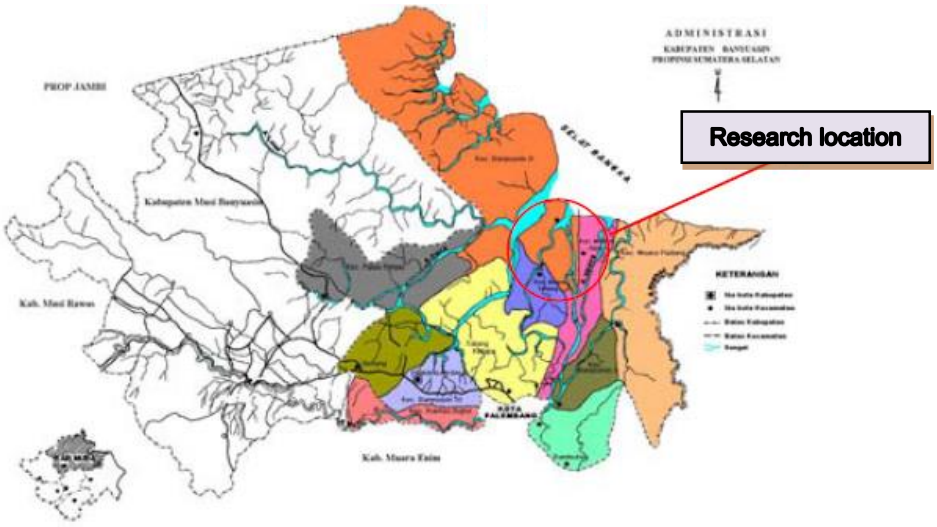

Figure 1. Location of Research (LWMTL, 2004)

Geographically, the region Telang I is located at 020 29 'to 020 48' latitude and 1040 30 'until 1040 52' east longitude. Generally Telang I is located in the north bordering the Strait of Bangka, south bordering the river By contrast, the east with the river Musi and the west bordering the river Telang I (Figure 2).

Hydrologically, I Telang area is an area surrounded by tidal rivers. Region east with the river Musi, the west bordering the river Telang, Bangka Strait in the south and the north is bordered by the river By contrast.

Figure 3 shows the layout of the hydro-topographic conditions in the area Telang I. Hydrology of the block is determined by adjacent channel conditions, the status of water in each channel, the operation of the door, the influence of the tides, and the climatic conditions such as rainfall and evapotranspiration.

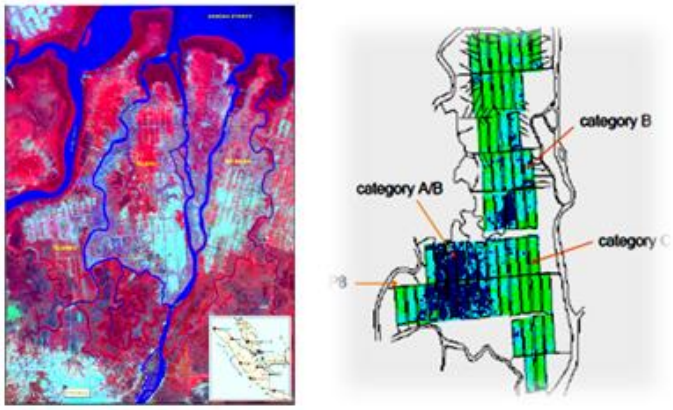

Fig. 2 and 3. Geographic location and hydro- topographic conditions of Delta Telang I

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Tools and Materials

Research Tools that will be used in this research are as shown in Table 1.

Table 1. List of the tools used in the study

No.	Tools	Unit	Uses
1	Stationery	2 pieces	Data recording results
2	Computer (RAM 2 GB)	1 unit	Perform general modeling
3	Printer	1 unit	Displaying writing in the report form
4	Software MIKE-11 Model, MS-Excel,	1 pieces	To perform modeling and data processing
5	Dongle (lisensi program)	1 pieces	To activate the software MIKE-11
6	Laptop	1 pieces	Assist to make report
7	Sieve multilevel • Oven • Digital scales	1 pieces	Determine the diameter of granular material
8	Software SPSS versi 16.0	1 pieces	To analysis statistical data

Source: author's propose, 2014

Results and Discussion

Use of Farming Production Factors

The production is the output of farming activities as a result of the use of production factors such as seed, fertilizer, pesticides and labor and the stability of the channel is no exception itself as a result of O & M activities. The use of factors of production per hectare in rice farming in the scheme P8-13S been calculated using the average use of each factor of production. The mean value of the use of each of the factors of production are presented in Table 2.

Table 2. The use of factors of production in rice farming in the scheme P8-13S

No	Production Factors	Average	Percentage
1	Seed (Rp/ha)	608.100	6,58
2	Fertilizer (Rp/ha)	723.600	7,83
3	Pesticides (Rp/ha)	689.580	7,46
4	Labor (Rp/ha)	7.222.810	78,13
	Total	9.244.090	100,00

Source: Primary data, 2014

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Based on the value of the use of factors of production in rice farming in the above, it can be said that the production factor of labor is the biggest with a value exceeding 75 per cent of the total cost of factors of production. This is due to each activity in rice farming involves the production factors of labor, ranging from land preparation, planting, maintenance, harvesting and post-harvest up.

Production, Production Costs and Revenues

Calculation of production, production costs and income of rice farming in the stable and unstable channels are presented in Table 3.

Table 3. Comparison of production, revenues, expenses and income between farms in the stable channel by channel unstable

No	Description	Farm in stable channel	Farm in unstable channel	Difference
1	Production average (ton/ha)	5,8	4,7	1,1
2	Revenue (Rp/ha)	29.021.264	24.013.130	5.008.134
3	Cost (Rp/ha)	9.528.055	8.910.739	617.316
4	Income (Rp/ha)	19.493.209	15.102.391	4.390.818

Source: Primary data, 2014

Table 3 presents a comparison (difference) the value of production, production costs and revenues between stabilized rice farming on the channel and the channel is not stable. The average production of rice in the stable channel is higher than the average production in line unstable. Similarly, revenues, costs and farm income.

Analysis of Factors Affecting Farm Income

Several factors are expected to affect revenues in tidal land usahatni P8-13S scheme is land, seeds, fertilizers, pesticides, labor and stability criteria channels.
Results of regression analysis of the influence of these factors on the income of rice farming in tidal land P8-13S scheme is presented in Table 4.

Table 4. Results of the analysis of the factors that affect the income of rice farming in Scheme P8-13S

No	Variable	Coefficient	t-test	Sig
1	Constants	13,200	2,826	0,007
2	Land	0,387	7,331	0,000[a]

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3	Seed	-0,094	-0,415	0,680
4	Fertilizer	0,113	1,019	0,314
5	Pesticides	0,088	0,922	0,362
6	Labor	0,068	0,237	0,814
7	Stability of channels (Dummy)*	0,386	5.113	0,000[a]
8	R^2	0,806		
9	F-test	29,783		0,000[a]

Description:
* Dummy variable stability of channels: 1 = stable; 0 = Unstable
a real confidence level of 99% (α = 0.01)
Source: Primary data, 2014

Table 4 shows that jointly factors influence the production of rice farming income with the value of Determinant coefficient (R2) of 0.806. This means that together five production factors can explain 80.6 percent of the variation in rice farming income. But individually, only the production factors of land and channel stability that significantly affect the income of rice farming.

Production factors of land has a regression coefficient of 0.387. This means that each increment 1 hectare rice farm would potentially provide additional income of Rp. 387,000, - if the other factors of production are considered permanent.

The stability of the channel (dummy variable) has a regression coefficient of 0.386. This suggests that the stable channel has the potential to provide rice farming income of Rp. 386,000, - higher than the line unstable. This difference was statistically significant thus proving that stability channel real impact on farm income.

Conclusion

Based on the results of the study show that together the factors of production affect the income of rice farming with a value of Determinant coefficient (R2) of 0.806. This means that together five production factors can explain 80.6 percent of the variation in rice farming income. But individually, only the production factors of land and channel stability that significantly affect the income of rice farming.

Production factors of land has a regression coefficient of 0.387. This means that each increment 1 hectare rice farm would potentially provide additional income of Rp. 387,000, - if the other factors of production are considered permanent.

The stability of the channel (dummy variable) has a regression coefficient of 0.386. This suggests that the stable channel has the potential to provide rice farming income of Rp. 386,000,

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