



THE IMPACT OF THE DEVELOPMENT OF AIR PINANG IRRIGATION NETWORK ON THE DEVELOPMENT OF WATER PINANG VILLAGE, SIMEULUE REGENCY, ACEH PROVINCE

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ABSTRACT

This study aimed to analyze the impact of the development of the Air Pinang irrigation network on the productivity of rice plants in Air Pinang Village, Simeulue Regency. The research was conducted in Simeulue Regency regarding the effect of the development of the Air Pinang irrigation network on the development of the area of the Pinang Village, Simeulue Regency, Aceh Province. The method of analysis used in this study was the t-test with a total of 78 respondents. The results showed that the impact of Air Pinang Irrigation Network Development shows that there are differences in the productivity of farmers' rice plants before and after the Air Pinang Irrigation Network is built and shows a significant effect. The average value of farmers' rice plant productivity before the construction of the Air Pinang Irrigation Network was 3.70 per hectare in one planting season and the average value of rice plant productivity after the construction of the Air Pinang Irrigation Network was 5.46 per hectare in one crop season. These findings suggest a difference of 1.76 per hectare in one planting season.

KEYWORDS: *Air Pinang Irrigation Network, Lowland rice productivity*

1. INTRODUCTION

The government has built various irrigation projects aimed at meeting agricultural irrigation needs and also as a means of tackling or preventing flooding. In accordance with the Decree of the Minister of Public Works number: 293 / KPTS / M / 2014, regarding the determination of the status of irrigation areas whose management is the authority and responsibility of the government, the provincial government, and regency/city governments, that in Simeule Regency there are 28 Irrigation Areas with regency authority, with an area of 2,950 ha. However, seeing the potential of water resources in Simeule Regency, especially the existing rivers, there

are still many that can be used to support the development of agricultural irrigation.

Air Pinang Village is one of the villages located in the Delog Sibao settlement, East Simeulue District, Simeulue Regency which is far from the district center. The area of Air Pinang Village is ± 6,000. m², which is divided into 5 (five) hamlets, namely Air Manis Hamlet, Karya Baru Hamlet, Karya Jaya Hamlet, Pinang Jaya Hamlet, and Blang Padang Hamlet with a population of 1,345 people, the majority of whom are Muslim and are livelihoods of farmers, traders, and fishermen, some become an employee in government and private offices.

The community hopes that the development of the Air Pinang irrigation network in Air Pinang



Village can have an impact on farmers' income in increasing the standard of living for the better welfare of the farming community. Apart from the irrigation system, rural agricultural production depends on the agricultural production factors used, such as land area, labor, seeds, fertilizers, and pesticides used.

Rural development has a strategic meaning and role in the framework of national development because the village and its communities are the foundation of economic, political, socio-cultural, defense and security strength as well as the central point of national development. Village development along with various problems in it is the development that is directly related to some of the people in rural areas

Objective of the study

This study aims to analyze the productivity of rice plants before and after the irrigation network in Air Pinang Village, Simuelue Regency

2. RESEARCH METHODOLOGY

This type of study is a descriptive description. The research methodology used in this study is quantitative where the analysis of data uses inferential statistics. Research has been conducted in Simeulu Village, East Simeule subdistrict, Simeule Regency, Aceh Province. The location selection was made on the basis that the Air Pinang Irrigation Network is located in Air Pinang Village, Simeulu Regency and that there are changes in the productivity of the rice plant and the land use of the community. The populations of this study were all households in Air Pinang Village, totaling 358 households. Sampling in this study will be conducted using cluster random sampling. The Yamane formula is used to determine the minimum sample size (Sugiono, 2004). Thus, the minimum sample size in this study was as many as 78 households. Data collection tools used in this study were interview guidelines and questionnaires, then the answers given by respondents to the questionnaire given for analysis were given weighted scores and analyzed using the Net Balance method.

To test the formulation of rice productivity problems before and after the Air Pinang irrigation network was available, the average difference test use paired samples (paired samples test t-test).

3. LITERATURE REVIEW

Soemarwoto in Rahmaniar (2018) states that impact is the process of the occurrence or emergence of pollution, both from the physical and social environment which will result in decreased quality and disruption of health and peace of living things including humans.

Tjahja (2000) argues that development is a planned change from one situation to another that is

considered to be better. Supardi (1994) argues that development is an integral and comprehensive social process, either in the form of economic growth or social change, for the sake of a more prosperous society.

Water is a determining factor in the process of agricultural production. As a result, investment in irrigation is very important and strategic in providing water for agriculture. To meet water needs for different agricultural business needs, water (irrigation) must be provided in the right quantity, time, and quality, otherwise the growth of plants will be disturbed, which in turn will have an impact on agricultural production (Directorate of Water Management, 2010).

In general, the government's budget for development is projected to have an impact on the economy. Indicators of economic impact include (1) distribution of income, (2) allocation of resources, (3) economic productivity, and (4) constraints on the economy (Haryono, 2004).

According to Dumairy (1992), irrigation is an attempt to provide an artificially control both groundwater and surface water to support agriculture. The right amount of water to be supplied to the rice field, the time of application and the availability of drainage channels are all factors that influence the success of the crop. Agronomically, high yielding rice seeds are very responsive to fertilization, provided that there is sufficient water. This means the availability of sufficient water will be able to increase the productivity of lowland rice.

The concept of regional development in Indonesia was born from an iterative process that combines the basics of theoretical understanding with practical experiences as a form of dynamic application (Sirojuzilam and Mahalli, 2010).

Hoover and Giarratani in Nugroho and Dahuri (2004) have concluded three significant pillars of the regional development process, namely:

(1) Imperfect mobility of factors, (2) Imperfect divisibility, (3) Imperfect mobility of goods and services. Budiharsono (2005) notes that at least 6 pillars/aspects must be supported by regional development, namely (1) biogeophysical aspects; (2) economic aspects; (3) socio-cultural aspects; (4) institutional aspects; (5) location aspects, and (6) environmental aspects.

4. RESULT

An overview of Simeulue Regency and the Air Pinang Irrigation Network

Simeulu Regency is one of the youngest regencies in the province of Aceh, the result of the ongoing struggle that began in 1957 at the Simeulu People's Congress in Luan Balu. Before 1965, the area was an administrative area that was part of the West Aceh Regency. Since 1967, the status has been



as an assistant to the Regent and subsequently by Government Regulation No. 53 of 1996 became an Administrative Regency, then on 12 October 1999, it was inaugurated as an Autonomous Regency based on Law No. 48 of 1999 at the same time as Bireun Regency, Aceh Province.

Based on the Earth Map of Indonesia at a scale of 1: 50,000, the land area of Simeulue Regency is geographically located in the west of Aceh Province with a distance of 105 nautical miles from Meulaboh, West Aceh Regency or 85 nautical miles from Tapak Tuan, South Aceh Regency and is in an astronomical position between 02 ° 15 '03' - 02 ° 55' 04 " North Latitude and 95 ° 40 '15' - 96 ° 30' 45 " East Longitude, with a length of Simeulue Island \square 100.2 Km and a width between 8 - 28 Km.

The Air Pinang Irrigation Network was built in 2016 which was implemented in Air Pinang Village, East Simeulue Subdistrict, Simeulue

Regency, a form of a forum for the Government's concern to the people carried out by the Directorate General of Water Resources of the Ministry of Public Works and Public Housing, Balai Sungai Wilayah II, Aceh Province. The Pinang Water Irrigation Network irrigates 216 hectares of land.

Based on the Law on the Establishment of the Regency, the land area of Simeulue Regency and other small islands is 212,512 Ha, while based on the Digitation of the Indonesian Earth Map, the Regional Development Planning Agency of Simeulue Regency, the land area of Simeulue is 183,809.50 Ha or around 3.26% of the total area mainland of Aceh Province, with the following boundaries:

North side : Bordering the Indian Ocean;

East side: Bordering the Indian Ocean;

West side : Bordering the Indian Ocean; and

South side : Bordering the Indian Ocean.

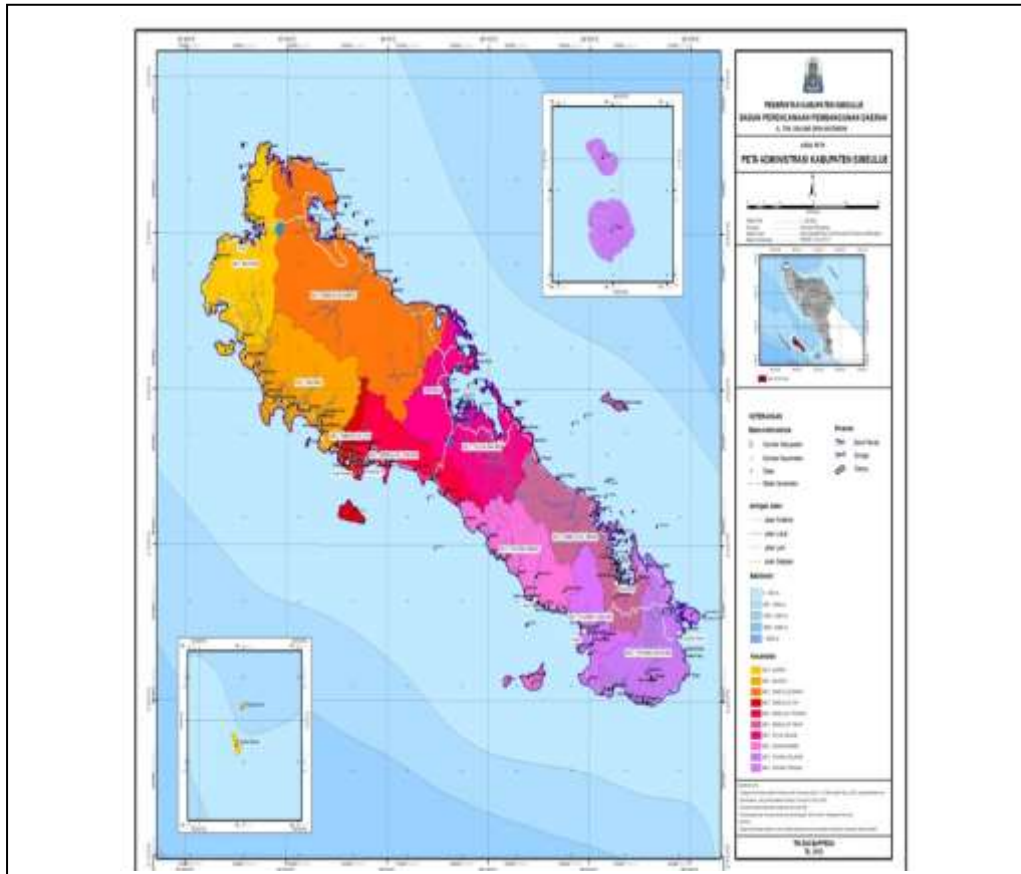


Figure 1. Administrative Map of Simeulue Regency



Table 1
Characteristics of Farmer Respondents

Variabel	Category	Frequency	Precentage
Age	30 – 35	16	21
	36 – 40	18	23
	41 – 45	25	32
	> 45	19	24
Level of education	Primary school	13	17
	Junior High School	17	22
	High School	28	36
	Diploma	20	26
Total Family Dependents	2 – 3	15	19
	4 – 5	44	56
	6 – 7	19	24
Length of stay (Year)	12	15	17
	16	21	26
	31	40	51
	19	24	31

Changes in Rice Productivity Before and After the Development of the Pinang Irrigation Network

Tabel 2
Different Test Results Calculation of Rice Productivity Before and After the Air Pinang Irrigation Network

Description	Productivity (ton)	F	Sig
Before the Irrigation Network	3,70	34,194	0,000
After the Irrigation Network	5,46		
	1,76		

Source: Primary data processed, 2020

Table 1 show that the productivity of farmers' rice plants before and after the Air Pinang Irrigation Network shows a difference. To prove the above hypothesis, using paired two-sample test analysis and from the two-sample test statistics it is known that the average value of farmers' rice plant productivity before the Air Pinang Irrigation Network was 3.70 tons per / Ha 1 planting season and the value average productivity of rice after the Air Pinang Irrigation Network is 5.46 per/ha 1 planting season. These results indicate a difference of 1.76 tonnes/ha per 1 planting season.

By using the analysis of the different tests of two samples in pairs, it is known that there is a difference in the average productivity of farmers' rice plants before and after the Pinang Irrigation Network exists with a significance level of 0.05. This can be seen from the output of the SPSS analysis by obtaining a Sig value of 0.000. These results indicate that H_0 is rejected and H_a is accepted because the productivity of the farmers' rice plants before and after the Air Pinang Irrigation Network shows a significant effect. After all, the results of the paired two-sample test are $0.000 < 0.05$.

The conclusion from the results of the two-sample test indicates that the null hypothesis is rejected or that the alternative hypothesis is accepted,

namely that there is a significant difference in the average test productivity of the rice plants before the irrigation network exists and the productivity of the farmers' rice plants after the Air Pinang Irrigation Network exists. The results of the SPSS calculations also show that the average productivity of farmers' rice plants after the Air Pinang Irrigation Network was higher than the average productivity of farmers' rice plants before the Air Pinang Irrigation Network was created.

This means that the Air Pinang Irrigation Network provides better results than without the Air Pinang Irrigation Network. There is a major effect of the differences between the average productivity of farmers' rice after the Air Pinang Irrigation Network and the average productivity of farmers' rice plants before the irrigation network operates, since rice plants need more water.

5. DISCUSSION

Water or irrigation is one of the important factors that can influence the growth of rice plants. The presence of irrigation is one of the aids of water supply for rice plants, where during the dry season the availability of water is reduced and there is an unstable distribution of water in lowland rice plants, which is why the local government is building



secondary irrigation channels that can connect the flow of the river to several channel points which then irrigates the rice fields as well as the irrigation system built in the East Simeulue subdistrict, Simeulue Regency. The irrigation system is one of the factors determining the planting time for lowland rice to be planted 1 to 3 times in one year, depending on the condition of the farmer's agricultural land.

Increasing productivity will have an impact on the development of other sectors, such as trade and industry, which will reduce unemployment and increase economic activity. Local economic development can create new jobs and stimulate local economic activities aimed at increasing the number and variety of job opportunities available to the local population, which will have an impact on increasing economic growth, reducing unemployment, reducing poor households, improving community welfare, and in the long term. Local government revenue from the tax sector may be increased (Pasaribu, 2009).

6. CONCLUSION

The impact of the Air Pinang Irrigation Network Development shows that there are differences in the productivity of farmers' rice plants before and after the Air Pinang Irrigation Network exists and shows a significant effect. The average value of farmers' rice plant productivity before the Air Pinang Irrigation Network was 3.70 tons per/Ha 1 planting season and the average value of rice plant productivity after the Air Pinang Irrigation Network was 5.46 per/Ha 1-time season plant. These results indicate a difference of 1.76 per/ha 1 planting season.

REFERENCE

1. *Badan Pusat Statistik. 2000. Indikator Sosial Ekonomi Indonesia. Biro Pusat Statistik Indonesia. Jakarta.*
2. *Budiharsono, S. 2005. Teknik Analisis Pembangunan Wilayah Pesisir dan Lautan, PT. Pradnya Paramita. Jakarta.*
3. *Direktorat Pengelolaan Air, 2010. Pedoman Teknis Rehabilitasi Jaringan Tingkat Usahatani (JITUT)/Jaringan Irigasi Desa (JIDES). Direktorat Jenderal Pengelolaan Lahan dan Air, Departemen Pertanian. Jakarta.*
4. *Dumairy. 1992. Ekonomika Sumberdaya Air. BPFE, Yogyakarta.*
5. *Keputusan Menteri Pekerjaan Umum Nomor: 293/KPTS/M/2014, tentang penetapan status daerah irigasi yang pengelolaannya menjadi wewenang dan tanggung jawab pemerintah, pemerintah provinsi, dan pemerintah Kabupaten/Kota.*
6. *Sirojuzilam. 2005. Regional Planning and Development. Wahana Hijau. Jurnal Perencanaan dan Pengembangan Wilayah. Vol.1 Nomor 1 Agustus 2005.*
7. *----- dan Mahalli, K. 2010. Regional. Pembangunan, Perencanaan dan Ekonomi. USU Press. Medan.*

8. *Sugiyono. 2004. Metode Penelitian. Bandung: Alfabeta.*
9. *Supardi,I. 1994. Pembangunan Yang Memanfaatkan Sumber Daya. PT. Rineka Cipta, Jakarta.*
10. *Tjahja. S. 2000. Konsep Pembangunan Yang Melakukan Pendekatan Kemanusiaan. Gadjah Mada Press, Yogyakarta*