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Comparison Of Lowland Rice Farming With Various Irrigation Sources In Manyak Payed District, Aceh Tamiang Regency

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Abstract

The aim of this study was to analyze the comparative income of paddy rice farming from the irrigation source method used in Manyak Payed District, Aceh Tamiang Regency. The sample for this study was 87 respondents spread across 15 villages in the Manyak Payed sub-district, Aceh Tamiang district. As for the results of this study, lowland rice farmers in Manyak Payed District, Aceh Tamiang Regency who use technical irrigation sources earn greater income and are significantly different from the group of farmers with irrigation sources from rivers with 6 inch diameter pumps, with an average net profit of a net profit of IDR 39,685,778 for technical irrigation and 34,842,909 for 6-inch pump irrigation, and the lowest is 3-inch pump irrigation with a profit of IDR 33,307,444. not too big compared to the other 2 irrigation systems, plus the maintenance costs are higher than technical irrigation and 6 inches.

Keywords: Comparison, Farming, Lowland Rice, Irrigation, Manyak Payed

INTRODUCTION

Farmers' income levels are generally influenced by several components, namely: the amount of production, selling prices, and costs incurred by farmers in farming. One problem that often arises in farming is the scarcity/difficulty of obtaining water. Climatic conditions and damage to irrigation networks are the causes of water scarcity. lack of maintenance of irrigation canals and reduced supply of water sources for irrigation, especially during the dry season, damaged existing irrigation networks (Dharma et al., 2019). The occurrence of competence in water demand in various sectors such as the domestic sector where the need for water is always increasing is the cause of reduced water supply for irrigation canals. Rice productivity is strongly influenced by water availability. If water needs are met, rice productivity will increase and vice versa (Widiyanto, 2020). Irrigation is an effort to provide, regulate and distribute irrigation water to support agricultural activities that require water as a source of life. The types of irrigation include surface irrigation, subsurface irrigation, underground water irrigation, water pump irrigation, jet irrigation, and others. The aim of irrigation is to properly utilize available irrigation water, namely as efficiently and effectively as possible so that agricultural productivity can increase as expected (Hidayah et al., 2013). Increasing the income and production of rice farmers is inseparable from the maintenance process provided by each farmer, both traditional and modern. There are several efforts made by farmers to increase rice production in Manyak Payed District, namely semi-technical irrigation methods, water pumps with a 3-inch pipe size, and a 6-inch water pump. Aceh Tamiang Regency is one of the districts in the province of Aceh, Indonesia. This district is the result of expansion of East Aceh District and is located on the border of Aceh-North Sumatra. Aceh Tamiang Regency has 12 sub-districts, where one of the sub-districts in Aceh Tamiang Regency is Manyak Payed District. Manyak Payed Sub-District is one of the sub-districts where most of the population's livelihood is paddy rice farming. The planting area of paddy rice in 2021 is 7,307 ha. In general, increasing the production of a farm is an indicator of the success of a farm. The following is data on the production of paddy rice farming in the Manyak Payed sub-district, namely

Table 1. Planted Area, Harvested Area and Total Production of Paddy Plants in Manyak Payed District

No	Years	Plating Area (Ha)	Harvest Area (Ha)	Production (Ton)
1	2017	8.205	8.950	54.595
2	2018	6.066	7.309	35.104,10
3	2019	4.581	4.677	27.289,60
4	2020	4.581	4.677	33.613,80
5	2021	7.307	5.030	34.925

Sources: Aceh Tamiang Agriculture, Plantation and Animal Husbandry Service, 2021

Based on table 1 above, it can be seen that the data on the planting area in the Manyak Payed sub-district has decreased from 2017-2020, it tends to decrease, from 8,205 ha (2017) down to 4,581 ha (2020), meaning that the planted area tends to be unstable, although in 2021 the planting area will increase. Meanwhile, it can be seen that the harvested area data in Manyak Payed District has decreased from 2017–2020, namely from 8,950 Ha (2017) down to 4,677 Ha (2020), meaning that the harvested area tends to be unstable, even though in 2021 the harvested area has slight increase. At the same time, rice crop production also tends to decrease from 2017-2019, namely from 54,595 tons (2017) to 27,289 tons (2019), although in 2020-2021 it experienced a slight increase. This means that from these data the total production of rice plants still tends to be less stable. Some lowland rice farmers are seeking an irrigation system by providing pump wells with a diameter of 3 inches. Several other farmers formed a group by procuring a 6-inch diameter pump that was used to suck up water from the river in the vicinity. The efforts they have made certainly have influenced the production and income of lowland rice farmers who use the three irrigation water procurement techniques.

RESEARCH METHODS

The form of this research is quantitative research with the method of observation (survey) and observations in the field. Analysis based on quantitative data obtained with research instruments in the form of a list of questions and literature studies originating from libraries, journals and documents from related agencies.

Conceptual Frame

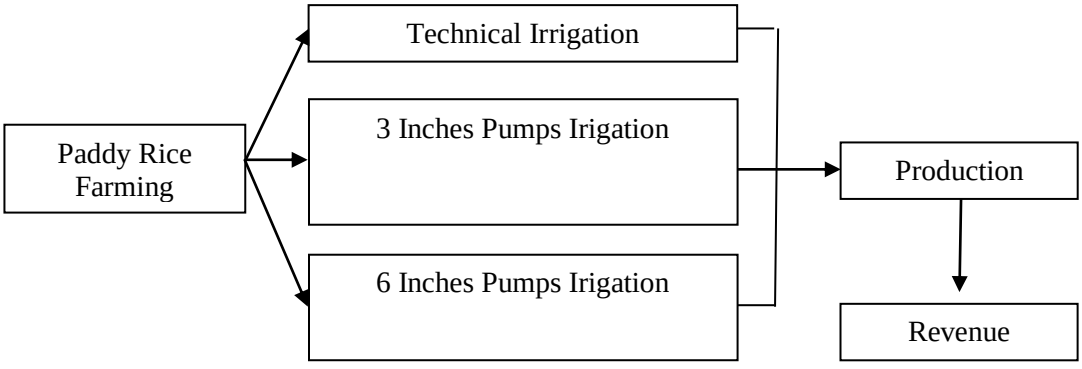

Figure. 1 Conceptual Frame

The population of this study were farmers in 15 villages, Manyak Payed District, Aceh Taminag District, namely 1,970 farmers. The sampling technique used in this study used a purposive sampling

technique. The number of sample farmers in this study was 87 samples consisting of 3 groups based on the type of irrigation used, namely a) technical irrigation of 29 farmers, b) Irrigation of well pumps with a capacity of 3 inches of 29 farmers and c) Irrigation of pumps of 6 inches capacity of 29 farmer The total cost of farming is calculated based on the formula presented as follows

TC = TFC + TVC
Explanation :
TC : total cost (Rp)
TFC : total fixed cost (Rp)
TVC : total variable cost (Rp)

Revenue from paddy rice farming is the result of multiplying the total physical yields obtained multiplied by their respective prices. According to Rosyidi (2004), the revenue formula is as follows: TR = P . Q

Explanation :
TR : total peneriman/total revenue (Rp)
P : price (Rp)
Q : quantity (kg)

Farmer's Revenue

Explanation :
I : income (Rp)
TR : total revenue (Rp)
TC : total cost (Rp)

R/C Ratio

The R/C ratio is the number of ratios used to see the relative profit that will be obtained in a project or a business. Actually a project will be said to be feasible if the R/C value obtained is stated to be greater than 1. This can happen because, if the R/C value is higher, the level of profit obtained in a project can be higher. The use of the R/C ratio is known to aim to determine the extent to which the results obtained from a profitable business in a certain period. The R/C ratio formula is R/C = TR / TC R/C. This study used a completely randomized design (CRD) with one treatment factor, namely farmer income based on the type of irrigation used as a source of water for rice fields. Treatment consists of 3, namely;

P1 : Type of technical irrigation
P2 : Type of well pump irrigation with a capacity of 3 inches
P3 : Type of river pump irrigation with a capacity of 6 inches

Each treatment used a sample of 29 farmers, so the total sample size was 87 people. Observational data were analyzed using Sidik Ragam, with the following Linear Model.

RESULT AND DISCUSSION

Responden's Charateristic

This research was conducted on a predetermined sample of 87 people (lowland rice farmers) in Manyak Payed District. The characteristics of the respondents used in this study can be seen based on gender, education, age and ricefield area.

Paddy Farming Business Costs

1. Fixed Costs and Variable Costs of Technical Irrigation

Variable Costs Variable costs are costs that are subject to change, both in terms of price and demand, so that the total funds issued by these variable costs often change according to conditions in the field, while the details of variable costs are

Tabel 2. Variable Costs of Technical Irrigation

Details of the variable costs of Technical Irrigation for the average ricefield area 0.94 ha (23.5 chain) (survey 29 farmers)			
No	Type of activity	Cost	Total Cost Average/Years
1	seed preparation / chain	Rp80,000	Rp1,881,379
2	land processing / chain	Rp100,000	Rp2,351,724
3	Seed (25-30kg) @ Rp 18000/kg	Rp18,000	Rp376,276
4	Fertilizer (Urea, KCL, NPK, OR)		Rp2,069,517
5	Pesticide		
	Herbicide		Rp413,903
	Insecticide		Rp235,172
	Fungsicide		Rp884,248
6	Seed cost		Rp94,069
7	planting cost / chain	Rp100,000	Rp2,351,724
8	fertilization /chain	Rp60,000	Rp1,411,034
9	Spraying cost /chain	Rp60,000	Rp1,411,034
10	combain harvest/ chain	Rp100,000	Rp2,351,724
11	Transport cost (200 bag @40kg)	Rp3,000	Rp564,414
	Total		Rp16,917,221

Analysis of Costs and Receipts of Technical Irrigation to find out whether a business is feasible or not, it is necessary to compare the costs incurred with the results to be obtained, for technical irrigation from 29 farmers the average land used is 0.94 ha, then the authors average the prices grain of IDR 5000, technical irrigation is the irrigation that produces the most yields, if the average yield is 8500 kg/ha the details of the expenditure and receipt of technical irrigation will be described in table 3

Tabel 3. Total Cost of Techincal Irrigation

total peneriman Technical irrigation	cost rata rata (29 people Farmers)		
ricefield area/chain (LR)			23.5 chain
Ricefield area/ha (LH)			0.94 ha
ricefield rent/ha/Years (Rp) (SW)	Rp8,466,207		
irigation cost/Years/ha (Rp) (IR)	Rp0		
variabel cost/ha/Years (Rp) (VC)	Rp15,423,755		
variabel cost/people/Years (Rp) (VCP)	Rp18,264,259		
farming total cost/Years (Rp) (TCP) (SW+ IR+TB+VC+ VCP)		Rp42,154,222	
yields/kg/ha (HP)	8184		
yields/kg/Years (2 times harvesting) (TP) (HPX2)		16368	

grain price (HG)	Rp5,000		
gross receipt (BR) (TP X HG)		Rp81,840,000	
revenue/ha/Years (NT) (BR-TCP)			Rp39,685,778

Sources : Data proceed by author penulis 2022

Table 4 shows that the average total costs incurred by farmers who use technical irrigation are IDR 42,154,222 which includes land rent, irrigation costs, variable costs, variable costs/person, for the average harvest produced is 1,6368 in 1 year. or 2 harvest times, if the price of grain is IDR 5,000, then the farmer's gross income is IDR 81,840,000, and if it is deducted by the total expenditure, the farmer will get an average net profit of IDR 39,685,778

2. Fixed Costs and Variable Costs of Irrigation Pump 3 inches

Fixed Cost

The fixed cost for irrigation with a 3-inch pump is slightly different from technical irrigation and a 6-inch pump. Farmers still pay for land rent, but added to the irrigation costs, the land rent remains the same in Manyak Payed District, which is IDR 9,000,000/ha. and for the cost of irrigation, namely fuel for the 3-inch pumping machine, the farmers are charged IDR 500,000/year

Tabel 4. Fixed Costs Average of Irrigation Pump 3 inches

ricefield rent/ha/Years (Rp) (SW)	7,299,310
irigation cost/Years/ha (Rp) (IR)	405,517

From the table it can be seen that the average fixed costs that farmers have to pay for land rent and irrigation costs are IDR 7,704,827 (land rent + irrigation costs.)

Variable cost

Variable costs are costs that are subject to change, both in terms of price and requirements, so that the total funds issued by these variable costs often change according to conditions in the field, while the details of variable costs are

Tabel 5. Variabel Cost of Irigation 3 Inch Pump

Details of the 3-inch pump cost variable for the average ricefield area 0.81 ha (20 chain) (survey 29 farmers)		
Type of activity	Cost	Total Cost
seed preparation / chain	Rp80,000	1,622,069
irigation cost (perawatan mesin) 500k-1 juta	Rp100,000	608,276
land processing / chain		2,027,586
Seed (25-30kg) @ Rp 18000/kg	Rp18,000	324,414
Fertilizer (Urea, KCL, NPK, OR)		1,784,276
Pesticide		
Herbicide		356,855
Insecticide		202,759
Fungsicide		762,372
seed costs		81,103
planting cost / chain	Rp100,000	2,027,586
fertilization /chain	Rp60,000	1,216,552
Cost semprot /chain	Rp60,000	1,216,552
combain yields / chain	Rp100,000	2,027,586
transport cost (200 bag @40kg)	Rp3,000	486,621
Total		Rp14,744,607

Sources: Data proceed by author, 2022

Cost Analysis and Revenue of 3 Inch Pump Irrigation

To find out whether a business is feasible or not, it is necessary to compare the costs incurred with the results to be obtained, for technical irrigation from 29 farmers the average land used is 0.94 ha, then the authors average the price of grain to Rp. 5000, irrigation technical irrigation is the irrigation that produces the most yields, on average it produces 7500-8000 kg/ha, yields vary because the water debit issued by the 3 inch pump is not as big as technical irrigation, while the details of the issuance and receipt of irrigation by the 3 inch pump will be explained in table 6

Table 6 Total Cost and Revenue of 3 Inch pump Irigation

Total revenue 3 inches pumps	Average cost (29 Farmers)		
ricefield area/chain (LR)			20chain
Ricefield area/ha (LH)			0.81 ha
ricefield rent/ha/Years (Rp) (SW)	Rp7,299,310		
irigation cost/Years/ha (Rp) (IR)	Rp405,517		
variabel cost/ha/Years (Rp) (VC)	Rp11,958,385		
variabel cost/people/Years (Rp) (VCP)	Rp11,636,240		
farming total cost/Years (Rp) (TCP) (SW+ IR+TB+VC+ VCP)		Rp31,299,453	
yields/kg/ha (HP)	6,461		
yields/kg/Years (2 times harvesting) (TP) (HPX2)		12921	
grain price (HG)	Rp5,000		
gross receipt (BR) (TP X HG)		Rp64,606,897	
revenue/ha/Years (NT) (BR-TCP)			Rp33,307,444

Table 6 shows that the average total cost to be incurred by farmers who use 3-inch irrigation is IDR 31,299,453 which includes land rent, irrigation costs, variable costs, variable costs/person, for the average harvest produced is 1,2921 in 1 year or 2 times the harvest, if the price of grain is IDR 5,000, then the farmer's gross income is IDR 64,606,897, and if it is deducted by the total expenditure, the farmer will get an average net profit of IDR 33,307,444, lower income than technical irrigation, plus again yields produced are also lower than technical irrigation.

3 Fixed Cost dan Variabel Cost of 6 Inches Irigation Pump

Fixed Cost

The fixed cost for irrigation with a 6-inch pump is slightly different from technical irrigation and 6-inch pumps. Farmers still incur costs for renting land, but added to the cost of irrigation. and for irrigation costs, namely fuel for 3-inch pumping machines, farmers are charged IDR 500,000/year

Tabel 7 Fixed Cost Average of 6 Inches Pump

ricefield rent/ha/Years (Rp) (SW)	7,224,828
irigation cost/Years/ha (Rp) (IR)	401,379

From the table it can be seen that the average fixed costs that farmers have to pay for land rent and irrigation costs are IDR 7,226,207 (land rent + irrigation costs.)

Variable Cost

Variable costs are costs that are subject to change, both in terms of price and requirements, so that the total funds issued by these variable costs often change according to conditions in the field, while the details of variable costs are

Tabel 8 Variabel cost Average of 6 Inches Irigation Pump

Details of the 6-inch pump cost variable for the average ricefield area 0.81 ha (20 chain) (survey 29 farmers)		
Type of activity	Cost	Total Cost
seed preparation / chain	80,000	1,605,517

land processing / chain	100,000	401,379
irrigation cost (perawatan mesin) 500k-1 juta		2,006,897
Seed (25-30kg) @ Rp 18000/kg	18,000	321,103
Fertilizer (Urea, KCL, NPK, OR)		1,766,069
Pesticide		
Herbicide		353,214
Insecticide		200,690
Fungsicide		754,593
seed costs		80,276
planting cost / chain	100,000	2,006,897
fertilization /chain	60,000	1,204,138
Cost semprot /chain	60,000	1,204,138
combain yields / chain	100,000	2,006,897
transport cost (200 bag @40kg)	3,000	481,655
Total		Rp14,393,462

Sources: Data proceed by author, 2022

Analysis of Costs and Revenue of Irrigation 6 inches

To find out whether a business is feasible or not, it is necessary to compare the costs incurred with the results to be obtained, for technical irrigation from 29 farmers the average land used is 0.81 ha, then the authors average the price of grain to Rp. 5000, irrigation technical irrigation is the irrigation that produces the most yields, on average it produces 8000-8500 kg/ha, yields vary because the water debit issued by the 6 inch pump is not as big as technical irrigation, while the details of the issuance and receipt of irrigation by the 6 inch pump will be explained in table 9

Tabel 9 Total Cost and Revenue Of 6 Inches Irigation Pump

Total revenue of 6 inches pumps		Average cost (29 people Farmers)	
ricefield area/chain (LR)			20chain
Ricefield area/ha (LH)			0.81 ha
ricefield rent/ha/Years (Rp) (SW)	7,224,828		
irrigation cost/Years/ha (Rp) (IR)	401,379		
variabel cost/ha/Years (Rp) (VC)	11,554,660		
variabel cost/people/Years (Rp) (VCP)	11,802,430		
farming total cost/Years (Rp) (TCP) (SW+ IR+TB+VC+ VCP)		30,983,298	
yields/kg/ha (HP)	6,583		
yields/kg/Years (2 times harvesting) (TP) (HPX2)		13165	
grain price (HG)	5,000		
gross receipt (BR) (TP X HG)		65,826,207	
revenue/ha/Years (NT) (BR-TCP)			Rp 34,842,909

Sources : Data proceed by author, 2022

Table 9 shows that the average total cost to be incurred by farmers who use 6-inch irrigation is IDR 30,983,298 which includes land rent, irrigation costs, variable costs, variable costs/person, for the average harvest produced is 13,165 in 1 year. or 2 times the harvest, if the price of grain is IDR 5,000, then the gross income of the farmer is IDR 65,826,207, and if it is deducted from the total expenditure, the farmer will get an average net profit of IDR IDR 34,842,909, the revenue generated by the irrigation

pump 6 inches is lower compared to technical irrigation, but more than 3-inch pump irrigation, this is because the costs incurred are not as much as 3-inch pumps

Revenue of Rice Paddy Farming Business

The income of lowland rice farming is obtained from the multiplication between the price at that time and the amount of production obtained by the farmers. Table 4.6 shows that the average total cost to be incurred by farmers who use technical irrigation is IDR 42,154,222 which includes land rent, irrigation costs, variable costs, variable costs/person, for the average harvest produced is 16,368 in 1 year. or 2 times the harvest, if the price of grain is IDR 5,000, then the farmer's gross income is IDR 81,840,000, and if it is deducted by the total expenditure, the farmer will get an average net profit of IDR 39,685,778. Table 4.9 shows the average total cost incurred must be spent by farmers who use technical irrigation is IDR 31,299,453 which includes land rent, irrigation costs, variable costs variable costs / person, for the average harvest produced is 12921 in 1 year or 2 times the harvest, if the price of grain is Rp. 5,000, then the farmer's gross income is Rp. 64,606,897, and if it is deducted by the total expenditure, the farmer i will get an average net profit of IDR 33,307,444, lower income than technical irrigation, plus the yields produced are also lower than technical irrigation. Table 4.11 shows the average total costs that must be incurred by farmers who use irrigation 6 inch is IDR 30,983,298 which includes land rent, irrigation costs, variable costs variable costs/person, for the average harvest produced is 13165 in 1 year or 2 harvest times, if the grain price is IDR 5000, then the farmer's gross income is IDR 65,826,207, and if it is deducted from the total expenditure, the farmer will get an average net profit of IDR 34,842,909, the income generated by the 6-inch pump irrigation is lower than technical irrigation, but more than the 3-inch pump irrigation, this is due to the costs issued not as much as a 3-inch pump.

The Profit of Paddy Farming Business Income

Farming income is obtained from reducing the income from paddy rice farming by the costs incurred by farmers while carrying out lowland rice farming. The average income of lowland rice farming earned by farmers based on the type of irrigation, for the average total cost to be incurred by farmers who use technical irrigation is IDR 42,154,222 for the average harvest produced is 16,368 in 1 year or 2 harvest times , if the price of grain is IDR 5000, then the farmer's gross income is IDR 81,840,000 , and if it is deducted by the total expenditure, the farmer will get an average net profit of IDR 39,685,778. for the average total cost to be incurred by farmers who use technical irrigation is Rp. 31,299,453 for the average harvest produced is 12921 = if the price of grain is Rp. will get an average net profit of Rp. 33,307,444. For the average total cost to be incurred by farmers who use 6-inch irrigation is Rp. 30,983,298 which includes land rent, irrigation costs, variable costs, variable costs/person, for an average harvest produced is as much as 13165 in that if the price of grain is IDR 5000, then the farmer's gross income is IDR 65,826,207, and if it is deducted from the total expenditure, the farmer will get an average net profit of IDR 34,842,909, the revenue generated by irrigation pumps 6 inches is lower than technical irrigation, but more than irrigation i pump 3 inches this is because the costs incurred are not as much as a 3 inch pump. so when compared it is more profitable to use technical irrigation than a 3 or 6 inch pump irrigation system, because it does not require maintenance costs and the yields produced are also greater .

R/C Ratio

R/C ratio is the number of ratios used to see the relative profit that will be obtained in a project or a business. Actually a project will be said to be feasible if the R/C value obtained is stated to be greater than 1. The average R/C ratio of lowland rice farming obtained by farmers based on the type of technical irrigation is 0.693. The average R/C ratio of lowland rice farming obtained by farmers based on the type of irrigation pump with a capacity of 3 inches is 0.468. The average R/C ratio of lowland rice farming obtained by farmers based on the type of irrigation pump with a capacity of 6 inches is 2.794. From the R/C ratio data for the three types of irrigation, what is feasible to run is based on the type of pump irrigation with a capacity of 6 inches, namely 2.794, because the value is greater than 1

Analysis of Multiple Test F

From the results of the analysis of variance on the income of lowland rice farmers based on irrigation sources, it was found that irrigation sources had a significant effect on farmers' income per hectare per year (Appendix 4.). Based on Duncan's Multiple Range Test, with α=0.05, it was found that farmers using irrigation earned the greatest income, namely an average of Rp. IDR 50,918,337 - per hectare per year, which is not much different from farmers who use irrigation from 6-inch pump wells, which is IDR 39,392,250 / per hectare per year. The income of farmers with technical irrigation is significantly different from farmers with 3-inch pump irrigation sources, which occupy the lowest income of IDR 19,163,140 per hectare per year as listed in the following table

Tabel 10 Duncan Factor Test : Revenue

Number	Treatment	Average of revenue (Rp)
1	P1 (Technical irrigation)	50.918.337 a
2	P2 (3 inches irrigation pumps)	19.163.140 ab
3	P3 (6 inches irrigation pumps)	39.392.250 b

Note: Numbers followed by the same letter are not significantly different according to Duncan's test with a level of 5% (α=0.05)

Tabel 11. Results of Examining the Variation of Farmer's Income Examining the Variation of Income of Paddy Paddy Farmers

Sources	db	JK	KT	Fval	P
			Main Effects		
P	2	5.409599e14	2.7048e14	6.6127597	0.0022 **
	Error	84	3.43583e15	4.0903e13	-
	Total	86	3.976789e15		
Model	2	5.409599e14	2.7048e14	6.6127597	0.0022 **

The results of the analysis of variance test showed that the calculated f value was 6.6127 and a significant level was 0.0022, in this study there was a significant difference between the use of technical irrigation, 3-inch pumps and 6-inch pumps, this can be seen from the P value of 0.0022 < 0.05, this shows that to increase the income of farmers in the Manyak Payed Aceh Tamiang sub-district, they must choose which irrigation suits their needs.

Thus the importance of the role of irrigation in increasing the income of lowland rice farming communities as shown in the table above. Therefore efforts to develop technical irrigation need to be continuously improved so that all lowland rice farmers in Manyak Payed District, Aceh Tamiang Regency can be served. Lowland rice farming communities have realized the important role of irrigation, so that some communities that have not been served by irrigation have attempted to procure irrigation independently through the construction of pumping wells and suction of river water.

Farmers with irrigation sourced from pumping wells with a diameter of 3 inches need fuel in the form of pertalite or diesel. Pertalite fuel is needed on average 80-100 liters per hectare per 1 harvest, while diesel fuel is spent around 40-50 liters. With such a large enough capital, the farmers in this group still earn an income that is not significantly different from the farmers in the technical irrigation group.
Farmers with a 6-inch pump irrigation source obtain water from the river around the rice fields. This group does not incur fuel costs individually but pays contributions to the group of Rp. 500,000 per hectare per harvest. In theory, the water supply obtained with a 6-inch pump is more fulfilled than with a 3-inch diameter. The problem that is often faced by this group is that in certain seasons the river water discharge is very small so that the source becomes very limited and this greatly affects the availability of water in the rice fields.

CONCLUSION

1. Lowland rice farmers in Manyak Payed District, Aceh Tamiang Regency who use technical irrigation sources earn greater income and are significantly different from the group of farmers with irrigation sources from rivers with 6 inch diameter pumps, with an average net profit of an average net profit of IDR 39,685,778 for technical irrigation and IDR 34,842,909 for 6-inch pump irrigation, and the lowest is 3-inch pump irrigation with a profit of IDR 33,307,444.
2. The use of pump wells with a diameter of 3 inches to produce lower yields because the resulting water debit is not too large compared to the other 2 irrigation systems, plus the maintenance costs are higher than technical irrigation and 6 inches.

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