International Journal of Multidisciplinary Research and Growth Evaluation.

The impact of the Serasi program on increasing production and revenue of swamp pad farmers

Nuraeni [1*], Nurliani [2], AM Habibi Razak [3]
[1-3] Agribusiness Study Program, Faculty of Agriculture, Indonesian Muslim University, Indonesia

* Corresponding Author: **Nuraeni**

Article Info

ISSN (online): 2582-7138
Volume: 04
Issue: 04
July-August 2023
Received: 23-06-2023
Accepted: 14-07-2023
Page No: 706-709

Abstract
The SERASI (Save Rawa Prosperous Farmers) program is an effort to increase the planting index and productivity through land optimization activities that are integrated with efforts to improve the standard of living of farmers through assistance in developing irrigation systems in swamplands. This study aims to: (1) Describe the implementation of the SERASI Program, (2) Describe the benefits obtained by farmers receiving the SERASI Program. (3) Analyze the differences in production and income before and after receiving the SERASI Program. (4) Analyze the impact of the SERASI Program on the production and income of the recipients of the SERASI Program. The data analysis method used is descriptive analysis, income analysis and statistical analysis of the Wilcoxon difference test. The respondents of this study were farmers receiving the SERASI Program. The research location is in Awang Cenrana Village, Cenrana District, Bone Regency. The results showed that (1) the implementation of the SERASI Program in Awang Cenrana Village, Cenrana District, Bone Regency went well from the planning, construction and evaluation stages. (2) Farmers receive benefits such as construction and repair of irrigation canals, assistance for main water pumps, assistance for production facilities, increased frequency of planting and assistance with assistance. (3) There are differences in the production and income of farmers, where the production and income of farmers increases after receiving the SERASI Program. (4) The very significant difference in production and income illustrates the positive impact of the SERASI Program on rice production and farmers' income.

DOI: https://doi.org/10.54660/.IJMRGE.2023.4.4.706-709

Keywords: SERASI Program, Rice Swamp, Rice Production, Farmer's Income and Impact of SERASI Program

Introduction

The agricultural sector plays an important role in providing food for the entire population as well as providing raw materials for industry and for the export trade. This begins with improving the quality of good human resources, whereby each individual in the household receives adequate, safe and nutritious food intake in a sustainable manner which in turn will improve health status and provide opportunities for each individual to reach their maximum potential. Thus food security is an integral component of national security, which is closely related to the quality of human resources (Bachrul, 2017) [4].

The magnitude of the community's need for rice has made rice plants as a producer of rice a commodity that continues to be cultivated and developed to meet food needs. Various efforts have been made by the government to increase domestic rice production towards self-sufficiency in rice. These efforts include the SERASI Program. The SERASI (Save Rawa Prosperous Farmers) program is an effort to increase the planting index and productivity through land optimization activities that are integrated with efforts to improve the standard of living of farmers through assistance in developing irrigation systems in swamps and agricultural commodities where the swamps themselves are divided into two, namely tidal swamps and lowland swamps.

Rawa lebak rice fields are rice fields that are cultivated in swamp areas by utilizing the natural rise and fall of the swamp water level, so that in the lebak rice field system there is no drainage system. These rice fields are generally found in areas that are relatively close to large or permanent river flow paths, namely in the back swamp with a slightly concave flat area shape, drainage conditions are obstructed to severely obstructed, the groundwater surface is shallow even to the point of being inundated in the rainy season, always exposed to flooding or flooding from nearby rivers during certain periods of the year. Therefore these fields can only be planted with rice after the stagnant water becomes shallow (rebb), and occurs generally during the dry season (Sofyan, 2010) [11]. The SERASI (Save Rawa Prosperous Farmers) program is one of the programs launched by the government in terms of optimizing agricultural land in swamplands to become productive agricultural land through structuring the water system and land management,

there are several obstacles in increasing the planting index and productivity in swamps, related to this, it is necessary to optimize agricultural land in swampland through improvement of land and water infrastructure with priority on repairing micro-water systems, rehabilitation or construction of floodgates, construction or improvement of other infrastructure in swamps, as well as improving the quality or fertility of swamps

The government in the 2019 Fiscal Year allocated a budget for swampland optimization activities through a pattern of government assistance that was handed over directly to farmer groups. Government assistance to farmer groups is carried out in reference to Minister of Finance Regulation Number 173/PMK.05/2016 concerning Mechanisms for Implementing Government Assistance Budgets in State Ministries/Institutions (Ministry of Agriculture, 2018) [8]. If the SERASI program is successful, it will increase agricultural productivity, where previously the harvest was only once a year, with this program it will be increased to twice a year with a productivity level of 10 tons of grain per year from only 3 to 5 tons per year. Meaning that it will increase the standard of living of the farmers participating in this program (Fathurrahman, 2020) [6].

This research was conducted to answer several problems regarding; (1) implementation of the SERASI Program (Save Swamp Prosperity of Farmers) in Awang Cenrana Village, Cenrana District, Bone Regency; (2) the benefits received by farmers receiving the SERASI Program (Save Swamp Welfare Farmers) in Awang Cenrana Village, Cenrana District, Bone Regency; (3) differences in farmer production and income before and after receiving the SERASI Program (Save Rawa Welfare Farmers) in Awang Cenrana Village, Cenrana District, Bone Regency; (4) the impact of the SERASI Program on the production and income of farmers receiving the SERASI Program (Save Rawa Welfare Farmers) in Awang Cenrana Village, Cenrana District, Bone Regency.

Research Methods

This research was conducted in Awang Cenrana Village, Cenrana District, Bone Regency, South Sulawesi Province. The choice of this location was based on the consideration that Cenrana District is one of the sub-districts in Bone Regency which is included in the list of 4 sub-districts receiving the Save Swamp Prosperity Farmers Program from the government. The SERASI program in Awang Cenrana Village, Cenrana District, Bone Regency began in 2019.

The population in this study were all farmers who were selected as recipients of the SERASI Program, totaling 208 people consisting of 7 farmer groups. The research sample was the management and members of the farmer groups from each of the 7 farmer groups using the simple random sampling method, so that the total sample size was 35 farmers. The simple random sampling technique is a random sampling technique for the existing population, where each population has the same opportunity and is independent (Sugiyono, 2014) [14].

Data collection techniques in this study were carried out using observation methods, questionnaires and interviews, as well as documentation (Albi and Johan, 2018) [2]. The analysis used is income analysis, where net income or business profit is obtained from the difference between total revenue and total expenditure (Soekartawi, 2016) [13]; Statistical Analysis The difference test used is the Wilcoxon test, this test is used to test research before and after the program (Hidayat, 2015) [7].

Results and Discussion

Implementation of the SERASI Program

The implementation of the SERASI Program in Awang Cenrana Village, Cenrana District, Bone Regency which was carried out by the South Sulawesi Government began in 2019 to 2020 which was attended by 7 recipient farmer groups farmers, submitted a Group Activity Proposal Plan (RUKK) to the sub-district office, then the sub-district submitted it to the Agriculture Service office. The Group Activity Proposal Plan (RUKK) is useful for asking for help for farmers who have swamp paddy fields.

After all land and farmer requirements have been met, then the next is construction activities, implementation of construction of swampland infrastructure development carried out on a self-managed basis adapted to field needs, including the construction or rehabilitation of embankments or farm roads, rehabilitation or construction of water gates, rehabilitation or construction of waterways irrigation and disposal, construction of water pumping units and their equipment provided that they have SNI or PTM (Minimum Technical Requirements) issued by the Minister of Agriculture, construction or rehabilitation of farming bridges, land preparation or processing and activity evaluation is carried out by each farmer group leader periodically once a month.

Benefits of the SERASI Program

The benefits of the SERASI Program are (1) the construction and repair of irrigation canals such as the construction of embankments and water gates which greatly affect the production process of swamp rice plants, where irrigation channels or water management were the main problem for swamp rice farmers prior to the existence of the program, (2) the assistance of water pumps in the main irrigation canals as a result of the repair and development, farmers can increase their production yields and plant twice a year, whereas prior to the SERASI Program, farmers were only able to carry out the planting process once a year with results that were not optimal, (3) the addition of agricultural production facilities such as rice seeds and also fertilizers obtained from government assistance with the aim of optimizing the production results of farmers and (4) assistance assistance which is continuously carried out by the Agriculture Service through agricultural extension agents in the Cenrana District which are useful for assisting and accompanying the farmers farmers receiving the SERASI Program.

Production Analysis

Production analysis, namely analysis to find out how much production is produced from the results of farming activities carried out. To find out rice production before and after the SERASI Program can be seen in the following table 1.

Table 1: Total Production and Average Production of Lowland Rice Farming Per Planting Season Before and After the SERASI Program, 2019

No	Description	Before Program	After Program
1	Harvest Frequency/Year (times)	1	2
2	Average Land Area (Ha)	2,4	2,4
3	Production Average (Kg/Ha/MT)	2.789	6.589

Based on Table 1, it shows that the production of paddy rice in Awang Cenrana Village, Cenrana District, Bone Regency before receiving the SERASI Program was only carried out once in a year with an average land area of 2.4 Ha. The average rice production per hectare per planting season is 2.789 tonnes/ha/MT. After the Serasi program, the rice cropping index increased to 2x planting (IP 200) and productivity increased to 6,589 tonnes/ha/MT. This is in line with the results of Budi *et al*.'s research. (2013) [5], in South Sumatra where the Serasi program on tidal land was able to increase the rice planting index

to IP 200 and rice productivity increased to 7.66 tons/ha.

Cost Analysis

Cost is the value of all the resources used to produce an item. Costs in farming can be classified into two, namely fixed costs and variable costs, (Maulidah, 2012) [9]. To find out how much the total cost of farming before and after the SERASI Program can be seen in the following table 2.

Table 2: Average Variable Costs and Fixed Costs per Hectare of Rice Farming Before and After the SERASI Program During One Planting Season

No	Description	Before Program (Rp)	After Program (Rp)
1	Seed	325.000	520.000
2	Fertilizer	1.543.363	2.445.685
3	Pesticide	267.649	267.649
4	Labor costs	2.442.039	3.127.753
Total Cost Variable		**4.578.051**	**6.361.086**
5	Tool shinkage	195.660	97.830
6	Land tax	20.833	10.417
Total Fixed cost		**216.493**	**108.247**

Based on Table 2, it shows that the variable costs and fixed costs of paddy rice farming before and after the SERASI Program in Awang Canrana Village, Canrana District, Bone Regency. The costs before the Serasi program consisted of a variable cost per hectare of IDR 4,578,051 during one planting season and a total fixed cost per hectare of IDR 216,493 during one planting season. After the Serasi Program, variable costs increased to Rp. 6,361,086/ha, while the fixed costs decreased to Rp. 108,247/ha. This is because after the Harmonization Program, fixed costs, namely depreciation of tools and land taxes, were divided into two growing seasons.

Revenue Analysis

Income is the amount received by members of the community for a certain period of time as remuneration for the factors of production that they contribute in participating in forming national products (Maulidah, 2012) [9]. Rice farming income before and after the SERASI program can be seen in the following table 3.

Table 3: Analysis of income per hectare of rice farming before and after the SERASI program during one planting season

No	Description	Pre-Program Income (Rp/ha/MT) (Rp/ha/MT)	Post-Program Income
1	Reception	12.549.107	29.651.786
2	Fixed cost	216.493	108.247
3	Variable cost	4.578.051	6.361.086
4	Total Cost (2+3)	4.794.544	6.469.333
5	Income (1-4)	7.754.563	23.182.453

Based on Table 3 above, it shows that there has been an increase in revenue and income as well as a decrease in the fixed costs of swamp rice farmers after the Serasi Program. Farmers' income is Rp.29,651,786/ha/MT and farmers' income is Rp. 23.182.453/ha/MT.

The results of Adi *et al*'s research (2022) [3], show that the income of farmers after the Serasi Program in Karya Bersama Village, Kapuas Murung District, Kapuas Regency is lower than the results of the study, where the resulting production was 1,416 tonnes/ha, with an income of Rp. 4,784,710/ha. This is because the implementation of the Serasi Program has not been optimal. The constraints faced by farmers are poor quality infrastructure, suspected low quality rice seeds.

Difference Test Analysis

The Wilcoxon signed rank test aims to measure the significance of the difference between 2 groups of paired data on an ordinal or interval scale but the data is not normally distributed. The Wilcoxon Signed Rank Test is an alternative test to the paired t test or paired t test if it does not meet the normality assumption. This test is also known as the Wilcoxon Match Pair Test. The Wilcoxon test is more sensitive than the sign test in determining differences between population means. Therefore, the Wilcoxon test was used to test the difference between production and income of swamp rice farmers before and after the SERASI program.

a. Analysis of Different Tests of Rice Production Before and After Accepting the SERASI Program. Production is an activity to increase benefits by combining production factors, namely capital, labor, technology and management (skills), (Soeharno, 2007) [10]. Rice production before and after the Serasi program can be seen in the following table 4.

Table 4: Wilcoxon Test of Rice Production Before and After Receiving the SERASI Program

Serasi program		N	Mean Rank	Sum of Ranks
Production after	Negative Ranks	0[a]	.00	00
Production prior	Postive Ranks	35[b]	18.00	630.000
	Ties	0		
		35		

Based on Table 4 above, it shows that the data from the Wilcoxon Signed Ranks test results show changes in the value of rice production before and after receiving the SERASI Program. Positive Ranks with an N value of 35 means that all these farmers have experienced an increase in yield from production after receiving the SERASI Program. The Mean Ranks or the average increase is 18.00 and the Sum of Ranks or the number of positive rankings is 630.0 and the tie value is 0, meaning that there is no similarity in production values before and after the SERASI Program.

The results of the Wilcoxon ranks test obtained an asymp Sig (2-tailed) value for the two-way test of 000, because sig <0.05, then H0 was rejected and H1 was accepted meaning that rice production after receiving the SERASI program increased.

b. Income Difference Test Analysis Before and After Receiving the SERASI Program (Table 5).

Table 5: Wilcoxon Test of Farmers' Income Before and After Receiving the SERASI Program

Serasi program		N	Mean Rank	Sum of Ranks
Production after	Negative Ranks	0[a]	.00	00
Production prior	Postive Ranks	35[b]	18.00	630.000
	Ties	0		
		35		

Based on Table 5, it shows that the data from the Wilcoxon Signed Ranks test results show changes in the value of farmers' income before and after receiving the SERASI Program. Positive Ranks with an N value of 35 means that all these farmers have experienced an increase in income after receiving the SERASI Program. The Mean Ranks or the average increase is 18.00 and the Sum of Ranks or the number of positive rankings is 630.0 and the tie value is 0, meaning that there is no similarity in production values before and after the SERASI Program.

The results of the Wilcoxon ranks test obtained an asymp Sig (2-tailed) value for the two-way test of 000, because sig <0.05, then Ho was rejected and H1 was accepted, meaning that the farmer's income after receiving the SERASI Program increased. This

shows that there is a significant difference between the production and income of farmers before and after receiving the SERASI Program (Save Rawa Prosperity of Farmers) in Awang Canrana Village, Cenrana District, Bone Regency. These results indicate that there is an influence of the SERASI Program on increasing production and income of farmers in Awang Cenrana Village, Cenrana District, Bone Regency. This is in line with Ariyano Alfa's research (2018) which shows a significant difference in income between before and after receiving the assistance program where the income of farmers after receiving assistance is greater than before receiving assistance.

The Impact of the SERASI Program on Farmer Production and Income (Table 6).

Table 6: Impact of Production Before and After the SERASI Program Per Planting Season

No	Description	Productivity (kg/ha/MT)	Impact
1	Before Program (Q1)	2.789	Q1 < Q2
2	After Program (Q2)	6.589	Q1 < Q2

Based on Table 6, it shows that rice production in Awang Cenrana Village, Cenrana District, Bone Regency has increased on average. The average rice production per hectare was 2,789 Kg/Ha/MT, with an increase in rice production after the SERASI Program of 6,589 Kg/Ha/MT.

The very significant difference in production illustrates the impact of the SERASI Program on rice production which has a positive impact on increasing production and farmer income in Awan Cenrana Village, Cenrana District, Bone Regency (Table 7).

Table 7: Impact of Farmers' Income Before and After the SERASI Program

No	Description	Income (Rp/ha/MT))	Impact
1	Before Program (π)	7.754.563	$\pi 1 < \pi 2$
2	After Program (π)	23.182.453	$\pi 1 < \pi 2$

Based on Table 7, it shows that the average income of farmers in Awang Cenrana Village, Cenrana District, Bone Regency has increased. Meanwhile, the average income of farmers per hectare was IDR 7,754,563/Ha/MT, with an increase in income after the SERASI Program of IDR 23,182,453/Ha/MT.

The very significant difference in farmer incomes illustrates the impact of the SERASI Program on farmer incomes which has a positive impact on the level of farmer income in Awan Cenrana Village, Cenrana District, Bone Regency.

Conclusions and Recommendations

Conclusion

Based on the data obtained from the research results, what can be concluded is as follows:

The implementation of the SERASI Program (Save Swamp Prosperity of Farmers) in Awang Cenrana Village, Cenrana District, Bone Regency went well which was carried out by the South Sulawesi Government carried out from 2019 to 2020 which was attended by 7 swamp farmer groups. The requirements for participating in the SERASI program are having land with clear and clean status, joining a farmer group, submitting a Group Activity Proposal Plan (RUKK). The implementation of the construction of swampland infrastructure development is carried out in a self-managed manner by P3A/GP3A/Poktan/Gapoktan in a mutual cooperation manner. Evaluation of activities is carried out by each head of the farmer group periodically (once a month) submitting a report on the results of implementation to the Budget User Authority/Head of the District/City Food Crops Agriculture Office.

The benefits of the SERASI Program are (a) Construction and repair of irrigation canals such as the construction of embankments and water gates, (b) Providing assistance with pumps located in irrigation canals to increase the frequency of planting twice a year, (c) Assistance with production facilities for rice seeds 40 Kg/Ha, urea fertilizer 200 Kg/Ha and Ponska fertilizer 350 Kg/Ha. (d) Increasing the frequency of planting, (d) Assistance by the Office of the Agriculture Office through agricultural extension workers in the Cenrana District

There are differences in the production and income of farmers before and after receiving the SERASI program in Awang Cenrana Village, Cenrana District, Bone Regency. The production and income of farmers before receiving the SERASI Program was smaller than the production and income of farmers after receiving the SERASI Program. It means. Farmers' production and income increased after receiving the SERASI Program.

Rice production and farmers' income in Awang Cenrana Village, Cenrana District, Cenrana District, Bone Regency have increased on average. The very significant difference in production and income illustrates the positive impact of the SERASI Program on rice production and farmers' income.

Suggestion

Based on the discussion that has been described, the suggestions that can be submitted are as follows:

The SERASI Program (Save Swamp Prosperity of Farmers) in Awang Cenrana Village, Cenrana District, Bone Regency still needs strict supervision from the government, in this case the Bone Regency Agricultural Service and cooperation assistance from farmer groups related to maintenance related to infrastructure development as a result of the SERASI Program, and also the government must minimize farmer complaints such as pest problems, cleanliness of irrigation canals due to water hyacinth plants which sometimes fill canals or floodgates which can become a problem for farmers regarding irrigation canals.

References

1. Ariyano Alpha. The Impact of the Agricultural Production Facilities Assistance Program on the Income of Chili Farmers in Kaunera Village, Sonder District, North Sulawesi. 2018;14(3):347-354.
2. Albi Anggito, Johan Setiawan. Qualitative Research Methodology. CV. Footsteps. West Java; c2018.
3. Adi Nina Budiwati, Muzdalifah. Analysis of Farmers' Income for the SERASI Program in Karya Bersama Village, Kec. Kapuas Murung, Kapuas Regency. Journal of Forntier Agribusiness; 2022:6(1).
4. Bachrul. The Role of the Indonesian Agricultural Sector. Jakarta; c2017.
5. Budi R, Imelda SM, Yanter H. Study of the Performance of Planting Tools and New Superior Rice Varieties in Tidal Land of South Sumatra. Journal of Agricultural Technology Assessment and Development; 2013:16(3).
6. Fathurrahman. Training on How to Calculate Volume in the Field and Reporting in the SERASI Program in Karwang Indah Village, Barito Kuala Regency; c2020.
7. Hidayat. Wilcoxon Normality Test Statistics with SPSS. Jakarta; c2015.
8. Ministry of Agriculture. Future Hope Compatible Program. Jakarta; c2018.
9. Maulidah Silvana. Introduction to Agribusiness Management. Brawijaya University Malang; c2012.
10. Soeharno. Managerial Economics. Andi First Edition. Yogyakarta; c2007.
11. Sofyan. Opportunities for Expansion of Paddy Fields in Indonesia; c2010.
12. Sugiyono. Educational Research Methods Quantitative, Qualitative, and R&D Approaches. Bandung; c2014.
13. Soekartawi. Farming Analysis, Jakarta: UI-Press; c2016.