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THE WELFARE LEVEL OF LOCAL RICE FARMING FAMILIES IN TIDAL SWAMP LAND OF BANJAR DISTRICT, KALIMANTAN SELATAN PROVINCE, INDONESIA

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ABSTRACT

This study aims to analyze the income of local rice farmers on three types of tidal swamp land A, B and C both on farm (on-farm), as well as on off-farm and non-farm activities, the level of welfare of local rice farmer families and identify the problems faced local rice farmers in three tidal swamp land types A, B and C in Banjar Regency. The results of the analysis show that the income of local rice farmers from tidal swamp land types A and B is higher than rice farmers from land type C in Banjar Regency. Based on welfare level indicators according to BKKBN 100% of local rice farmers in tidal swamp land types A and B and land type C in Banjar Regency are in the prosperous level category III. Meanwhile, according to the Central Bureau of Statistics for Banjar Regency, indicators for the level of welfare show that 91% of local rice farmers in tidal swamp land types A and B and land type C are above the poverty line or prosperous, while the remaining 9% of farmers are below the poverty line or not prosperous. The problems faced by local rice farmers in the three types of tidal swamp land A, B and C in Banjar Regency are climate change and pest disturbances in the form of rats and stink bugs and tungro disease.

KEY WORDS

Welfare, local rice, tidal swamp.

The productivity of rice plants in swamps has not shown satisfactory results evenly. In cultivated areas with a once-a-year cropping pattern using local varieties, it is generally still low (Saderi et al., 2007).

Based on developments in rice production in South Kalimantan in 2019-2020, it has decreased by 208,411.61 tons. This is due, among other things, to a decrease in the rice harvest area of 64,219.17 ha. However, seen from the productivity of rice, it has increased by 0.115 tons/ha (BPS Kalimantan Selatan, 2021).

Banjar Regency is one of the rice production centers in South Kalimantan. Based on the development of the rice harvest area in 2019-2020 it has decreased by 26,224.20 ha, so that rice production has also decreased by 77,504.66 tons. However, seen from the productivity of rice has increased by 0.118 tons/ha. However, judging from rice production in 2020, Banjar Regency occupies the first position compared to other districts (BPS Kalimantan Selatan, 2021).

Rice farming in tidal swamp land in Banjar Regency is classified as subsistence because most of it is to meet the needs of family food consumption and only a small part is for sale. The fact shows that the income of farmer households in tidal swamp land in Banjar Regency is still relatively low. Empirical evidence of the low income level of farming households can be seen from various data relating to poverty because the main cause of poverty is the low income of farming households apart from several other factors such as education and health.

The percentage of poor people in Banjar Regency in 2020 is 8.05% (15,120 people) of the total poor people in South Kalimantan Province (BPS Kalimantan Selatan, 2021). Most of the poor population is engaged in the agricultural sector, mainly farmers who cultivate rice plants.

The purpose of this research:

- Analyze the income of local rice farmers on three tidal swamp land types A, B and C



- both on-farm, as well as on off-farm and non-farm activities in Banjar Regency;
- Analyze the level of welfare of local rice farming families in three types of tidal swamp land A, B and C in Banjar Regency;
 - Identify the problems faced by local rice farmers in the three tidal swamp land types A, B and C in Banjar District.

METHODS OF RESEARCH

This research was conducted in Banjar Regency. This research was conducted from April to October 2022.

In this study the data used were primary data obtained by direct interviews with local rice farmers in tidal swamp land types A, B and C. In addition, secondary data was needed to support primary data obtained from literature studies, or related agencies.

Analyzing the costs and income of local rice farmers in three types of tidal swamp land A, B and C both on farm (on-farm), as well as on off-farm and non-farm activities:

$$TC_i = TC_e + TC_i$$

Where: TC - total cost of farming (IDR); TC_e - total explicit cost (IDR); TC_i - total implicit cost (IDR).

Tool shrinkage:

$$D = \frac{N_a - N_s}{Up}$$

Where: D - depreciation value of fixed capital goods (IDR/year); N_a - the initial value of fixed capital goods equal to the purchase price (IDR); N_s^* - residual value of fixed capital goods (IDR); UP - age of use of fixed capital goods (years).

Farming revenue:

$$TR = Q \times P$$

Where: TR - farming revenue (IDR); P - production price (IDR /kg); Q - production yield (kg).

Farming income:

$$I = TR - TC$$

Where: I - farm income (IDR); TR - farm revenue (IDR); TC_e - total explicit cost (IDR).

Income from non-farming:

$$I_{nu} = TR_{nu} - TC_{nu}$$

Where: I_{nu} - non-farm income (take home pay) (IDR); TR_{nu} - total non-farming income (IDR); TC_{nu} : total non-farming costs (IDR).

Farmer's total income:

$$I_{tot} = I_{un} + I_{nu}$$

Where: I_{tot} - total household income (IDR); I_{un} - farm income (IDR); I_{non} - non-farming income (IDR).

Analyzing the level of welfare of local rice farming families in tidal swamp land using a descriptive analysis tool that is based on BKKBN indicators:

- Poor: ≤ 170 ;
- Prosperous I: 171-271;
- Prosperous II: 272-372;



- Prosperous III: 373-473;
- Prosperous III Plus: > 473.

The welfare level of farmers uses the poverty line indicator from the Central Bureau of Statistics. Where is the poverty line in Banjar Regency in 2021 of Rp. 482,867/capita/month (BPS Kabupaten Banjar, 2022). If the income earned is less than that then it is classified into the poor category.

Identifying the problems faced by local rice farmers is by using a descriptive analysis tool. This analytical method is used to describe the condition of the problems faced by farmers in carrying out local rice farming in Banjar Regency.

RESULTS AND DISCUSSION

Local rice farming income from tidal swamp land is the difference between the total revenue and the total explicit costs incurred by farmers in implementing local rice farming.

Table 1 – Average total cost per hectare

Description	Land types A and B (IDR)	Land types C (IDR)
Implicit costs		
Labor in the family	3.441.688	3.052.439
Land costs	4.177.502	3.972.428
Capital interest costs	496.106	490.087
Explicit costs		
Seed	69.661	67.210
Fertilizer	449.014	722.857
Fertilizer	406.380	432.374
Tool depreciation	630.211	670.974
Family labor	2.581.836	2.044.284
Agricultural mechanization labor	646.350	5.227.304
Total cost	12.898.748	12.742.257

Source: Primary data processing, 2022.

The average total cost of local rice farming in tidal swamp land types A and B incurred by farmers is calculated in per unit area (farming costs per hectare) for rice farmers in land types A and B of IDR 12,898,748, while rice farmers land type C of IDR 12,742,257 (Table 1).

Labor in the family in the implementation of local rice farming in tidal swamp land includes nursery activities, land preparation, planting, maintenance (weeding, fertilizing and pest control), harvesting, transportation and drying. Based on Table 1, family labor costs for local rice farming in tidal swamp land types A and B are higher than rice farmers in land type C when viewed from a hectare perspective. This is based on the average use of labor in rice farming families with land types A and B of 36.36 HKO/ha, while the average use of labor in rice farming families with land type C is 32.51 HKO/ha.

Local rice farming land cultivated by rice farmers of land types A, B and C is their own. Even though the arable land is self-owned, the cost of the land is still calculated. Based on Table 1, the average cost of land incurred by rice farmers for land types A and B is greater than for rice farmers for land type C when viewed from the cost per farm and per hectare. This is based on the average area of land type A and B rice farmers (1.03 ha or 36.10 wholesale) compared to land type C rice farmers (0.99 ha or 34.79 wholesale).

The capital issued by farmers in running local rice farming in tidal swamp land types A, B and C is owned by them. Even though the capital used is self-owned, the amount of interest costs on their own capital is still taken into account by farmers for the implementation of local rice farming in this study. Based on Table 1, the average interest cost of own capital incurred by rice farmers on land types A and B is greater than that of rice farmers on land type C. This is based on the average capital issued by rice farmers on land types A and B which is greater than the capital of farmers land type C rice.

The rice seeds used by farmers are local varieties. Based on Table 1, the average cost



of seeds incurred by rice farmers in land types A and B is greater than that of land type C rice farmers. This is based on the average amount of seed used by rice farmers in land types A and B (8.75 kg/ha) more than rice farmers with land type C (8.89 kg/ha).

Fertilizers that are taken into account in this study are dominant or relative fertilizers used by farmers in the study area. Based on Table 1, the average cost of fertilizer incurred by rice farmers for land types A and B is greater than for rice farmers for land type C. This is based on the average amount of fertilizer used by rice farmers for land types A and B (199.20 kg/ha) more than rice farmers with land type C (322.44 kg/ha).

The drug pesticides that were taken into account in this study were the dominant or relative drug pesticides used by farmers in the study area. Based on Table 1, the average cost of medicines incurred by rice farmers in land types A and B is greater than that of rice farmers in land type C. This is based on the average number of medicines used by rice farmers in land types A and B (2, 41 L/ha) more than land type C rice farmers (2.57 L/ha).

The cost of depreciation of tools is calculated from the depreciation value of the tools used by farmers in local rice farming in tidal swamp land, where the tools used include plows, machetes, tantajuk, lanjung, sickles, sacks, tarpaulins, gumbaam and handsprayer. Based on Table 1, the average tool depreciation cost incurred by rice farmers on land types A and B is greater than that of rice farmers on land type C. This is based on the average number of tool depreciation used by rice farmers on land types A and B more than rice farmers land type C.

Labor outside the family in the implementation of local rice farming includes land preparation, planting and harvesting (harvesting rice). Based on Table 1, the cost of labor outside the family for local rice farming tidal swamp land types A and B is greater than for rice farmers on land type C. This is based on the average use of labor in rice farming families on land types A and B as much as 26.17 HKO/ha, while the average use of labor outside the family of rice farmer land type C is 20.79 HKO/ha.

Agricultural mechanization labor in the implementation of local rice farming includes land preparation (handtractors), harvesting (threshing rice using agricultural mechanization in the form of power threshers and combine). Based on Table 1, the labor costs for using agricultural mechanization for local rice farming in tidal swamp land types A and B are small compared to rice farmers in land type C. This is based on the average workforce using agricultural mechanization for land types A and B of 4.42 HKO/ha, while the average workforce using agricultural mechanization for land type C is 4.53 HKO/ha. This is because rice farmers with land types A and B use agricultural mechanization only in harvesting activities (power thresher), so the costs incurred are lower than rice farmers with land type C. Meanwhile, rice farmers with land type C use agricultural mechanization in land processing activities (handtractor) and harvesting activities (power thresher and combine).

Revenue is the result of multiplying the amount of production produced for sale with the selling price of production. Based on Table 2, the average income generated by local rice farmers from tidal swamp land types A and B is smaller than rice farmers from land type C. This is based on the average rice production produced by rice farmers on land type C which is higher compared to rice farmers with land types A and B, although the selling price of rice farmers with land types A and B is higher than rice farmers with land type C.

Table 2 – The average income of local rice farming farmers from tidal swamp land per hectare

Description	Land types A and B	Land types C
Average production (kg)	2.585,40	2.909,15
Average selling price (Rp)	7.971	7.538
Revenue (IDR)	20.595.666	22.013.643

Source: Primary data processing, 2022.

Local rice farming income from tidal swamp land is the difference between total revenue and total explicit costs incurred by farmers in implementing local rice farming.

Based on Table 3, the average total income of local rice farmers in tidal swamp land types A and B is smaller than that of rice farmers in land type C. This is because the average revenue generated by local rice farmers in tidal swamp land types A and B is smaller



compared to rice farmers in land type C. Although the average explicit costs incurred by local rice farmers in tidal swamp land types A and B are smaller than rice farmers in land type C.

Table 3 – Average farmer income per hectare

Description	Land types A and B	Land types C
Revenue	20.595.666	22.013.643
Explicit cost	4.783.452	5.227.304
Income	15.812.213	16.786.340

Source: Primary data processing, 2022.

The main occupation is workers who are focused or prioritized by farmers, namely local rice farming in tidal swamp land as a source of household income. In addition, to obtain additional income, farmers do routine side jobs in their spare time, farmers can do this work. These jobs are farm laborers, fishermen (capture fisheries) and cleaning laws. This work includes off-farm activities. Off-farm activities are businesses outside agriculture but still related to agricultural commodities.

Table 4 – Average income of local rice farmers in off-farm activities per year

Description	Land types A and B	Land types C
Off-farm 1	2.480.000	3.956.364
Off-farm 2	2.870.588	0
Off-farm Income	5.350.588	3.956.364

Source: Primary data processing, 2022.

Based on Table 4, the income of local farmers of tidal swamp land in the off-farm activities of local rice farmers on land types A and B is greater than that of local rice farmers on land types C. This is because rice farmers on land types A and B have two types of jobs, namely as farm laborers or fishermen and the job of cleaning the law, while land type C rice farmers only have one type of work for off-farm activities, namely as farm laborers or fishermen. Income per year is only calculated for 8 months. This is in accordance with the length of time the local rice farming has been running for 8 months, so that the calculation of income for off-farm activities is 8 months.

Farm workers can be interpreted as people who work for the land owner and get a good daily wage. The activities carried out by farm laborers are generally in the research area, namely land preparation activities using traditional tools in the form of plows, planting and harvesting activities (harvesting rice using sickles). Apart from doing the work he is paid for, the daily laborer also does the job of clearing laws that are to be sold to other people.

As for the activities of other local rice farmers who work as fishermen or who usually do capture fisheries. In this study the fishermen in question are capture fisheries activities carried out in public waters. The fish obtained from capture fisheries activities are papuyu fish, sepat and snakehead fish, some of which are for sale and for daily consumption.

Farmers Income on Non-Farm Activities. To obtain additional income, farmers do other side jobs that can be done in their free time. The job is as a builder, trade and motorcycle taxi driver. This work includes non-farm activities. Non-farm activities are businesses outside agriculture and are completely unrelated to agricultural activities.

Based on the results of the study, the income of local tidal swamp farmers on non-farm activities of local rice farmers on land types A and B (IDR 3,764,706) is less than rice farmers on land type C (IDR 4,096,970). This is due to the fact that the income of rice farmers for land types A and B only comes from being construction workers and trading, while rice farmers for land type C have a source of income from construction workers, traders and motorcycle taxi drivers.

Income per year is only calculated for 8 months. This is in accordance with the length of time the local rice farming has been running for 8 months, so that the calculation of income for non-farm activities is 8 months. In this study, trading means stalls where small trades are held, selling cakes, drinking coffee and tea, cigarettes and groceries on a small scale. What



is meant by the work of a builder is a builder who repairs houses or builds houses in the village or outside the village.

Farmers Total Income. Broadly speaking, there are three sources of income for local rice farmers from tidal swamp land in Banjar Regency, namely from local rice farming (on-farm), off-farm activities and non-farm activities. Based on the results of the study, the total income of local rice farmers from tidal swamp land types A and B (IDR 25,425,127) was higher than rice farmers from land type C (IDR 24,737,938). This is due to the fact that the income of local farmers in tidal swamp land in the off-farm activities of rice farmers on land types A and B is greater than that of local rice farmers on land types C. Rice farmers on land types A and B have two types of jobs, namely as farm laborers or fishermen and the job of cleaning the law, while rice farmers with land type C only have one type of work for off-farm activities, namely as farm laborers or fishermen. On-farm activity is the implementation of local rice farming which is the main focus of farmers because this farming activity is the main source of income for farmers to meet their daily needs. To support increasing farmers' income, farmers carry out additional or side jobs, namely in off-farm activities (fishing, farm labor and cleaning laws) and non-farm activities (builders, trades and motorcycle taxi drivers).

In this study the level of welfare of local rice farmers in tidal swamp land raced against the BKKBN indicators (Pre-Prosperous, Prosperous I, Prosperous II, Prosperous III and Prosperous III Plus) by grouping the results of the answers to the questionnaire from the entire population according to their respective criteria. each respondent converted into a score and percentage.

Based on the results of the study, the welfare level of local rice farmers in tidal swamp land types A and B and land type C is at a prosperous level III. The average score obtained for land type A and B rice farmers is 426 and C land type rice farmers is 425 including the criteria on a score of 373 - 473, so that it includes welfare level III.

The level of welfare of farmers using the income indicator of local rice farmers from tidal swamp land is compared to the criteria that have been put forward by the indicators of the Central Bureau of Statistics for Banjar Regency, a household income of IDR 482,867/capita/month. Based on the results of the study, respondent farmers in Banjar Regency at the level of welfare of local rice farmers in tidal swamp land types A and B and land type C are relatively the same, namely 91% of farmers are above the poverty line or prosperous, while the remaining 9% of farmers are below the poverty line. poverty or not well off. This is in accordance with the poverty line criteria from the Central Statistics Agency for Banjar Regency, a household income of IDR 482,867/capita/month. Income earned less or below the poverty line is classified into the category of poor or not prosperous. Conversely, if it is above the poverty line, it is classified as not poor or prosperous.

In the local rice farming of tidal swamp land carried out by farmers of land types A and B and land type C, various kinds of problems cannot be separated. From the research results, there are major problems encountered in lowland rice farming, namely climate change and pest disturbances in the form of rats and leafhoppers as well as tungro disease.

The impact of climate change, the water level in the rice fields during the planting season is still high, so that the planting schedule that should be carried out according to the routine planting schedule is usually carried out by farmers experiencing a shift in the planting schedule. At that time the rice tillers in the nursery (track) were old and entered the generative phase, so that when planting in paddy fields the number of tillers did not increase anymore (the number of tillers was less than normal tillers). The arrival of a long dry season causes the plants to experience drought, the number of panicles is small and the grain loss rate is high. This causes productivity to decrease and in the end production decreases.

The pest walang sangit (*Leptocoris oratorius*) attacks paddy rice plants by sucking the liquid from the flower stalks and grains of rice during the grain filling and grain cooking phases so that the filling of the rice grains is not perfect, and often results in empty rice grains. The existence of this pest attack can lead to a decrease in lowland rice production and reduce grain quality. Farmers control this pest attack by chemical means, which is done by spraying insecticides.



Tungro disease is a rice disease caused by two types of viruses, namely the rice tungro bacilliform virus (RTBV) and Rice tungro spherical virus (RTSV). Both viruses are transmitted by several species of green leafhoppers and other leafhoppers. Rice plants infected with the tungro virus generally appear stunted and have yellow leaves, especially on young leaves. The main symptom of tungro disease is seen in changes in leaf color, especially in young orange-yellow leaves starting from the tip of the leaf. Younger leaves curl, reduced number of tillers, stunted plants and stunted growth. These symptoms are usually scattered in clusters in the rice planting area so that the rice fields look bumpy because of the difference in plant height between healthy plants and diseased plants. Symptoms usually begin to appear 6-15 days after infection. Young plants are more susceptible to infection dispersing old plants. If the plants are two months old without infection, tungro disease has less effect on damage and yield loss.

Tungro infection can occur from the nursery. At this stage the plant is very susceptible to viral infections. If infection occurs at the nursery stage, tungro symptoms will be seen on plants aged 2-3 weeks after planting. Infected young plants will be a source of infection in the field.

CONCLUSION

The income of local rice farmers from tidal swamp land from tidal swamp land types A and B is higher than rice farmers from land type C in Banjar Regency. The income of rice farmers for land types A and B is IDR 3,178,141/month or IDR 25,425,127/8 months consisting of income from on-farm activities of IDR 2,038,729/month or IDR 16,309,833/8 months, off-farm activities farm income of IDR 668,824/month or IDR 5,350,588/8 months and non-farm income of IDR 470,588/month or IDR 3,764,706/8 months. While the income of rice farmers for land type C is IDR 3,092,242/month or IDR 24,737,938/8 months consisting of income from on-farm activities of IDR 2,085,576/month or IDR 16,684,604/8 months, off-farm activities of IDR 494,545/month or IDR 3,956,364/8 months and non-farm income of IDR 512,121/month or IDR 4,096,970/8 months.

Based on indicators of welfare level according to BKKBN 100% of local rice farmers in tidal swamp land types A and B and land type C in Banjar Regency belong to the prosperous level category III. Meanwhile, according to the Central Bureau of Statistics for Banjar Regency, indicators for the level of welfare show that 91% of local rice farmers in tidal swamp land types A and B and land type C are above the poverty line or prosperous, while the remaining 9% of farmers are below the poverty line or not prosperous.

The problems faced by local rice farmers in the three types of tidal swamp land A, B and C in Banjar Regency are climate change and pest disturbances in the form of rats and stink bugs and tungro disease.

Recommendations:

- Farmers should have side jobs to increase their income;
- Farmers should implement family planning programs (family planning with enough 2 children) which can reduce living costs so that welfare can be achieved properly;
- The government, especially the Department of Agriculture, should provide training programs on procedures or innovations in local rice farming so that farmers' knowledge is not left behind;
- The need for pest and disease management carried out by local rice farmers in a preventive and integrated manner. Farmers sprayed pesticides, even though there was no attack. Farmers carry out physical and organic pest control. Physically, namely by catching or baiting. Organically, namely by using animal or vegetable pesticides that are made alone or made in groups;
- The role of local extension workers is to hold socialization or training on integrated pest control, so that farmers do not depend on chemicals or pesticides to control pest attacks on local rice plants managed by farmers.



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