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Return To Factors Production Of The Cultivation Brown Rice (*Oryza Nivara*) In Teluk Lombung Village Babirik District Hulu Sungai Utara Regency

Yudi Ferrianta*, Rifiana

Department of Agricultural Economics, Faculty of Agriculture, Lambung Mangkurat University, Banjarbaru, 70714

* Correspondence: ferrianta@gmail.com

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ABSTRACT

Hulu Sungai Utara Regency is one of the regencies in South Kalimantan which is one of the regions that produce brown rice. Based on the nutritional content, brown rice is very good for food-insecure areas. This research is raining to find out the costs, revenues, and profits of brown rice, to find out compensation and the problems faced in brown rice farming. The type of data used primary and secondary data. The total sample of respondents was 11 farmers using the census method. The average land area used by brown rice farmers was 0.46 Ha. Based on the results of research on brown rice, it includes preparation of seedlings, land preparation, planting, maintenance, harvesting. The total costs incurred by farmers were Rp. 17,303,649, - per ha. The total farmer income was IDR 32,139,130 per ha. The total income of brown rice farmers was IDR 29,847,942 per ha. The benefits obtained by farmers were Rp. 14,835,481, - per ha. Return to farmers' capital was Rp.6,843,428, - per farm. Return to Land was Rp.6,843,428, - per farm. Return to family labour of brown rice farmers was IDR 6,799,348 per farm. The problem of brown rice farmers was mostly an obstacle in regulating water, the difficulty of obtaining new land to cultivate brown rice, the difficulty of marketing the results of red rice to the community and the benefits of labour received by the brown rice farmers smaller than the UMR of Hulu Sungai Regency North.

Keywords: cost, income, profit, revenue.

1. Introduction

Indonesia is known as an agricultural country with vast agricultural land and abundant natural resources. Agriculture plays an important role in the overall national economy. This can be shown from the number of residents who live or work in the agricultural sector. Indonesia's agricultural sector is divided into five sub-sectors: food crop subsector, plantation subsector, livestock sub-sector, forestry subsector, and fisheries subsector (Soekartawi, 2002).

Brown rice is one type of rice that contains high nutrition. The antioxidants produced by brown rice come from the anthocyanin pigment. The content of *antithyroid* in brown rice can treat various diseases such as cancer, cholesterol and coronary heart disease with relatively low cost. The skin of brown rice is rich in fiber, natural oils and essential fats (Anhar, 2013).

Hulu Sungai Utara Regency is one of the regencies in South Kalimantan which is one of the brown rice-producing regions with good results to be developed. 10 subdistricts in North Hulu Sungai Regency, only *Babirik* District produces brown rice with a land area of 5.07 ha and yields of 0.15 tons/ha for one crop.

The Agricultural Extension Center of *Babirik* Subdistrict that produces brown rice is *Teluk Limbung* Village, only 3 farmer groups produce brown rice with a total planting area of 5.07 ha from an area of 11 ha or only 46% of the planting area of brown rice from the land area owned by the 3 farmer groups. It is seen that farmers are not interested in growing brown rice even though the selling price of brown rice is higher than white rice and there is public awareness of the importance of the nutritional content of brown rice for health so that the prospect of brown rice is very good to be cultivated.

The objectives of this research are: 1) Analyzing the costs, revenues and profits of brown rice in Teluk Limbung Village, Babirik District, Hulu Sungai Utara Regency. 2) Analyzing return to factor production of brown rice farming in Teluk Limbung Village, Babirik District, Hulu Sungai Utara Regency. 3) Knowing the problems faced in the brown rice farming in Teluk Limbung Village, Babirik District, Hulu Sungai Utara Regency.

This research is expected to be useful as information and input for farmers regarding brown rice farming, Can be taken into consideration for the government to determine better policies in agriculture. For researchers to find out more about brown rice farming

2. Materials and Methods

This research was conducted in the village of Teluk Limbung, Babirik Subdistrict, North Hulu Sungai Regency, which began in March 2018 until November 2018, starting from the preparation, data collection, data processing, until the preparation stage.

In this study, the data used two types; primary data and secondary data. For primary data obtained from the results of direct interviews with farmers using a list of questions that have been prepared. While secondary data is obtained from the relevant department or agency and the literature related to this research.

Sampling by census method, from the population of 11 farmers, the respondents were taken from 3 farmer groups in Teluk Lembung Village, Babirik District, Hulu Sungai Utara District. The criteria for selected farmers are farmers who plant brown rice every year with a planting time of 6 months.

Data analysis

To answer the first objective, analyzing the number of costs, revenues, income, and profits of rice farming in brown rice can be done using the following formula:

$$TC = TCe + TCi \quad (1)$$

TC total cost farming business brown rice (Rp)
Tce total cost explicit farming business brown rice (Rp)
TCi total cost implicit farming business brown rice (Rp)

To calculate the depreciation value of equipment used the calculation used the straight-line method "Straight Line Depreciation Method" in determining the amount of depreciation, expressed by the formula:

$$D = \frac{Na - Ns}{Up} \times Le \quad (2)$$

D The amount of depreciation of fixed capital (Rp/Th)
Na Initial value of fixed capital (Rp)
Ns The rest of capital goods estimated same as the price at the time was not be used (Rp)
Up Economic life for fixed capital (year)
Le the use of effective fixed capital of goods.

To calculate the revenue from red rice farming, the following calculation is used:

$$TR = Y. P_Y \quad (3)$$

TR Total revenue of farming business brown rice (Rp)
Y a lot of output brown rice (kg)
P_Y price of brown rice (Rp/kg) meanwhile for counting revenue from farming brown rice can be used the same formula mathematically formulated (Kasim, 2004)

$I = TR - TCe$ (4)

I income farming business brown rice (Rp)

Whereas to calculate the amount of profit obtained from red rice rice farming using the following formula:

$\Pi = TR - TC$ (5)

Π advantages of farming business brown rice (Rp)

TR Total admission (Rp)

TC Total cost (Rp)

To answer the second objective, analyzing the remuneration of brown rice, the formula of analyzing the remuneration for total capital can be formulated as follows (Soekartawi, 1986).

RTC = NFI-TKDK (6)

Return to total capital (RTC) — It services to capital (Rp)

Net farm income (NFI) — Net income (Rp)

Family's Labor (FL)

Table 1. Return to total capital from farming business brown rice

Description	value (Rp)
acceptance of farming business	A
Total spending farming (without Family's Labor)	B
Net farm Income	c = a – b
The value of family labor	D
Return to total capital	e = c – d

"return to land":

RTL = NFE - The value of land lease (7)

Table 2. Return to land from farming business brown rice

Description	value (Rp)
acceptance of farming business	a
Total spending farming (Without land lease)	b
Net farm income	c = a – b
loan capital interest	d
Net farm earnings	e = c – d
The land lease	f
Return to land	g = e – f

Return to land (RTL) (Rp)

Net farm earnings (NFE) (Rp)

Retribution to workers in the family can be calculated as follows,

Return to family labor (RFL) = NFE - Farmer's capital interest (8)

Table 3. Return to family labour from farming business brown rice

Description	value (Rp)
Net farm income	A
loan capital interest	B
Net farm earnings	c = a – b
Farmer's capital interest	D
Return to family labor	e = c – d

Whereas for the third purpose, knowing the problems faced in brown rice farming in Teluk Limbung Village, Babirik District, Hulu Sungai Utara Regency is by observing directly during interviews with farmers and analyzing in a qualitative description

3. Results and Discussion

Farming Costs

Farming costs incurred by brown rice farmers include explicit costs and implicit costs.

Explicit Fees

Explicit costs are the costs incurred by farmers such as seed costs, tool depreciation costs and outside family labour costs. From the description of the cost components above, it can be described the total explicit costs of brown rice farming as presented in Table 4.

Table 4. Explicit costs of farming red rice in Teluk Limbung Village

Cost	Per farm (Rp)	Per hectare (Rp)
Seed	119.636	260.078
Outside Family's Labour	400.909	871.541
Depression	533.402	1.159.569
Total	1.053.947	2.291.188.

Based on Table 4, it can be seen that the explicit costs incurred include the cost of seeds amounting to Rp 119,636, - per farm, labour costs outside the family of Rp 400,909, - per farm, tool depreciation costs Rp 533,402, - per farm. So of all the cost components added together the total explicit cost of Rp 1,053,947 per farm or 2,291,188 per hectare was obtained by red rice farmers in Teluk Limbung village.

Implicit Costs

Implicative costs are costs that are only calculated as costs, not an expenditure paid in real terms by farmers. The implicit cost of farming for brown rice is the wage of labour for families and land rent. The details presented can be seen in Table 5.

Table 5. The implicit cost of brown rice farming in Teluk Limbung Village

Cost	Per farm (Rp)	Per ha (Rp)
Family's Labour	1.914.545	4.203.592
Costs for land rent	4.928.000	10.713.044
Capital interest	44.080	95.826
Total	6.886.625	15.012.461

Total Cost

The total cost is the sum of the implicit costs and explicit costs incurred by the brown rice farmers in each production. Details of total costs are presented in Table 6.

Table 6. Total costs of brown rice farming in Teluk Limbung Village

Description	Per farm (Rp)	Per ha (Rp)
Explicit costs	1.053.947	2.291.188
Implicit costs	6.886.625	15.012.461
Total	7.940.572	17.303.649

Based on Table 6, it can be seen that the total cost of brown rice farming is IDR 7,940,572, - per farm or IDR 17,303,649, - per ha consisting of explicit costs of IDR 1,053,947, - per farm or IDR 2,291,188, - per ha and implicit cost of Rp.6,886,625, - per farm or Rp.15,012,461, - per ha.

Production and Acceptance

Production is the output obtained from cultivated brown rice, while the receipt of brown rice is the amount of brown rice production multiplied by the selling price of brown rice. The details are presented in Table 7.

Table 7. Production of brown rice paddy farming in Teluk Limbung Village

Description	Per farm	Per ha
Production (kg)	2.464	5.356
Price (Rp/kg)	6.000	6.000
Income (Rp)	14.784.000	32.139.130

Income

Revenues are derived from the difference between total revenues and explicit costs in one production process. The details of brown rice farming income are presented in Table 8.

Table 8. The income of red rice farming in Teluk Limbung Village

Description	Per farm (Rp)	Per ha (Rp)
Income	14.784.000	32.139.130
Explicit costs	1.053.947	2.291.188
Net income (3=1-2)	13.730.053	29.847.942

Based on Table 8, it can be seen that the average income obtained by red rice farmers in the village of Teluk Limbung in seeking red rice is very large at Rp.13,730,053 per farm or Rp.29,847,942 per ha.

Advantage

The profit is the result of revenue with the total costs sacrificed in brown rice farming, namely the explicit and implicit costs. Based on Table 9, it can be seen that the average profit gained by brown rice farmers in the village of Teluk Limbung in seeking brown rice is Rp 6,843,428 per farm or Rp.14,835,481, - per thus the farms cultivated by farmers in Teluk Limbung village can be said to be profitable but has problems in marketing brown rice, because some people do not like the taste of brown rice and brown rice has a high price compared to the price of white rice. The details of the benefits are presented in Table 9.

Table 9. Advantages of rice farming in Teluk Limbung Village

Description	Per farm (Rp)	Per ha (Rp)
Income	14.784.000	32.139.130
Total costs	7.940.572	17.303.649
Profit (3=1-2)	6.843.428	14.835.481

Return to factor production in brown Rice Farming

Return to factor production in farming needs to be taken into accounts, such as return to capital, return to land, and return to family labour.

Return to Capital

Return to capital is influenced by net farm income and the value of family labour. The income received by the respondent farmers was Rp.14,784,000 per farm, the total expenditure (without TKDK) from the red rice farming was Rp.6,026,027, - per farm. Return to capital is Rp. 6,843,428 per farm consisting of a difference in net income of Rp.8,757,973 per farm and the value of family labour Rp.1,914,545 per farm.

Table 10. Return to total capital from brown rice farming in Teluk Limbung Village

Description	Per farm
Farm income	14.784.000
Farm expenditure (without Family's Labor)	6.026.027
Net farm Income	8.757.973
Family's Labor value	1.914.545
Return to total capital	6.843.428

The average return to total capital obtained by the respondent farmers is positive. This shows that farmers benefit from all capital issued, both cash and non-cash. The average return on all capital from a

brown rice farming respondent has a relatively large value because of the high average price and the amount of brown rice output. When seen from the net farm income, the respondent farmers can still carry out farming activities for the next growing season because they have positive net income.

Return to Land

Return to land also needs to be taken into account to see rewards obtained by farmers for the land used for conducting farming activities. In addition, it is also used to calculate whether land should be leased or continue to be used for farming activities.

The average value of farm net income obtained by respondent farmers is Rp. 11,771,428, while the average loan capital interest that must be paid by the respondent's farmers who borrow is Rp.0, because the capital to run farmers' red rice farming uses their capital. The details of compensation for land are presented in Table 11.

Table 11. Return to the land of brown rice farming in Teluk Limbung Village.

Description	Per farm
Farm income	14.784.000
Farm expenditure (without land rent)	3.012.572
Net farm income	11.771.428
Capital interest	0
Net farm earnings	11.771.428
Value of land rent	4.928.000
Return to land	6.843.428

The average return to land used by the respondent farmers to carry out positive farming activities is Rp. 6,843,428. This shows that the land used by respondent farmers to carry out farming activities is very productive and good for brown rice cultivation. The high average value of remuneration for land shows that economically, the land will be more profitable if used to carry out brown rice farming activities by respondent farmers rather than leased.

Return to Family Labour

Return to family labour is calculated to see whether the farmer should be continue to work on farming activities. The average value of return to family labour from brown rice farming is Rp. 6,843,428 per farm. This shows that the farmer gets an average reward or remuneration of Rp. 6,843,428, - per farm for himself and other family members who helped in the activities of angry rice farming for six months.

The value of return to family labour is converted into per month, then the value becomes Rp. 1,133,224, - per farm per month when compared to the regional minimum wage (UMR) that applies in Hulu Sungai Utara Regency in 2017 which is Rp. 2,258,000, - per month means that being a workforce in a brown rice farm gets smaller rewards from the applicable UMR. The value of return to family labour if divided by the number of family members who participated in assisting in farming activities which on average amounted to 3 people, so that each individual in the farmer's family receives a return of only Rp.377,741, - per person per month. The details of remuneration for family labour (return to family labour) are presented in Table 12

Table 12. Return to family labor of brown rice farming in Teluk Limbung Village

Description	Per farm
Net farm income	6.843.428
Capital interest	0
Net farm earnings	6.843.428
Capital interest for farming	44.080
Return to family labor	6.799.348

Problems with brown Rice Farming in Teluk Limbung Village

The comparison of the area of brown rice farming in Teluk Limbung Village, Babirik Subdistrict, North Hulu Sungai Regency is 5.07 Ha with the area of white rice farming that is 117.8 Ha or 1:23. This shows that the paddy farmers in the gulf village are not yet interested in further developing the brown

rice farming. Although in terms of the selling price of brown rice is higher than the selling price of white rice which is Rp. 17,000 per kg for brown rice and Rp.8,000 per kg for white rice. Farmers are still not interested in cultivating the brown rice, due to several problems faced by the brown rice farmers in Teluk Limbung Village.

The first problem in brown rice farming in Teluk Limbung village is having problems in regulating water conditions, brown rice farming is swampy swampland. Lebak swamp is a non-tidal swamp whose source of water comes from rainfall, both local rainfall, and upstream rainfall so that the water level is affected by the rainfall. Swampland is divided into three types: water 1 shallow lebak, watun 2 lebak, and watun 3 lebak deeply or very deep. The brown rice farming land in Teluk Limbung village is the middle lebak, an area that has a pool height of 50-100 cm with a period of inundation 3-6 months in a year. The area has hydrotopography lower than shallow treads and is a region between shallow treads and deep taps, very suitable for farming brown rice with a harvest age of about 6 months, so as to make the brown rice farming land in watun 2 must have a good water management method so that during the rainy season it is not flooded and during the dry season it is not too dry when doing farming.

The second problem is the difficulty of obtaining land for brown rice cultivation because the brown rice paddy farming land must be newly cleared. This is done because with the newly opened land, it is expected that the brown rice cultivation will be free of chemical residues from fertilizers and medicines on the land. The results of brown rice in Teluk Limbung Village have been certified by INOFICE Bogor on organic farming so that brown rice farmers must maintain the quality of organic brown rice. In addition, land used for brown rice cultivation is also not allowed to coexist with white rice fields because will disturb when pollinating brown rice and will affect the yield of brown rice not as expected.

The third problem faced by brown rice paddy farmers in Teluk Limbung Village is that it is difficult to market brown rice products because people are not too fond of the taste of brown rice and the price of brown rice is very expensive compared to white rice, consumers of brown rice are only from certain groups just like the community who care about health who will buy and consume brown rice, instead of white rice for people with diabetes, coronary heart disease and those who want to diet. So far, farmers only sell to farmer groups "Usaha Bersama" in Limbung bay village, then Gapoktan conducts the milling and packaging process in two types of packaging weighing 1 kg each with plastic packaging for Rp. 17,000 per kg and packaging boxes with prices IDR 23,000 per kg. for more details, packaging can be seen in Appendix 12.

The fourth problem, based on the calculation of compensation for labor in the family of brown rice farming is smaller than the prevailing UMR of North Hulu Sungai Regency. This also eventually made farmers less interested in becoming brown rice farmers.

4. Conclusions

1. The amount of explicit costs incurred by one-time farmers is Rp. 1,053,947 per farm or Rp. 2,291,188 per ha. The implicit fee is IDR 6,886,625 per farm or IDR 15,012,461 per ha. The total costs incurred by farmers are Rp. 7,940,572 per ha of farming or Rp.17,303,649 per ha.
2. The average production of brown rice is 2,464 kg per farm with total farmer income of IDR 14,784,000 per farm or IDR 32,139,130 per ha. The total income of brown rice farmers is IDR 13,730,053 per farm or IDR 29,847,942 per ha. The profit gained by farmers is IDR 6,843,428 per farm or IDR 14,835,481 per ha.
3. Return to farmers' capital is IDR 6,843,428, - per farm. Return to land n is Rp. 6,843,428, - per farm. Return to family labour of brown rice farmers is IDR 6,799,348 per farm.
4. The problem of brown rice farmers in Teluk Limbung village, Babirik District, North Hulu Sungai Regency is mostly an obstacle in water management, it is difficult to get new land to cultivate brown rice, it is difficult to market the results of brown rice to the community and reward workers in families who received by brown rice farmers smaller than UMR of North Hulu Sungai Regency.

References

Amri, Alfian Nur. 2011. *Analisis Efisiensi Produksi dan Pendapatan Ubi Kayu (Studi Kasus Desa Pasirlaja, Kecamatan Sukaraja, Kabupaten Bogor*). *Skripsi*. Fakultas Ekonomi dan Manajemen, Institut Pertanian Bogor

Anhar, A. 2013. *Eksplorasi dan mutu beras genotip padi merah di kabupaten Pasaman Barat Sumatera Barat. Prosiding.* Universitas Lampung. 97–101.

Hantoro, F.R.P. 2007. *Teknologi Budidaya Padi Gogo*. Balai Pengkajian Teknologi Pertanian Jawa Tengah Badan Penelitian dan Pengembangan Pertanian

Hernanto F. 1996. *Ilmu Usahatani*. Jakarta (ID): Penebar Swadaya.

Kasim, Syaifuddin. 2004. Petunjuk Menghitung Keuntungan dan Pendapatan Usahatani. Lambung Mangkurat University Press. Banjarmasin

Kuswadi. 2007. *Analisis Keekonomian Proyek.* Yogyakarta: PT. Andi.

Lincolin, Arsyad. 2004. *Ekonomi Pembangunan.* Yogyakarta: Sekolah Tinggi Ilmu Ekonomi YKPN.

Mubyarto. 1995. *Pengantar Ekonomi Pertanian* PT. Pustaka LP3ES Indonesia, anggota IKAPI. Jakarta.

Soekartawi, 1986. *Ilmu Usahatani dan Penelitian untuk Pengembangan Petani Kecil*. Jakarta : UI Press.

Soekartawi. 2002. Prinsip Dasar Ekonomi Pertanian, PT Raja Grafindo Persada Jakarta

Suratiyah K. 2011. *Ilmu Usahatani*. Jakarta (ID): Penebar Swadaya

Teguh Rahayu. 2000. *Budidaya Tanaman Padi Dengan Teknologi Mig-6 plus*. BPP Teknologi dan MiG-6 Plus