

moving_rice_transplanter_with_ manual_in_Sidoraharjo_Village. pdf *by*

Submission date: 08-Feb-2023 03:40PM (UTC+0700)

Submission ID: 2009209662

File name: moving_rice_transplanter_with_manual_in_Sidoraharjo_Village.pdf (667.28K)

Word count: 3545

Character count: 17198

PAPER • OPEN ACCESS

Comparison of rice farming income planting system moving rice transplanter with manual in Sidoraharjo Village

13

To cite this article: R A Nadja *et al* 2021 *IOP Conf. Ser.: Earth Environ. Sci.* **807** 032068

10

View the [article online](#) for updates and enhancements.

You may also like

7

- [Competitive and comparative advantages analysis of organic rice farming in Sumberjambe sub-district Jember regency](#)
L E Widyatami, D K Wardani and A A Wiguna

- [Technical efficiency of organic rice farming in Ngawi Regency \(The case of the 28 unitas Ngawi Organic Center\)](#)
B K Krisdiyanto, M Harisudin and H Irianto

7

- [Analysis of organic rice farming income in Kulisusu North Buton District, Southeast Sulawesi](#)
I P Tamburaka



244th Electrochemical Society Meeting

October 8 – 12, 2023 • Gothenburg, Sweden

50 symposia in electrochemistry & solid state science

Abstract submission deadline:

April 7, 2023

Read the call for papers &
submit your abstract!

Comparison of rice farming income planting system moving rice transplanter with manual in Sidoraharjo Village

R A Nadja, I Summase, M Salam, N Busthanul, R Bakri, B Hartono

Agribusiness Study Program, Faculty of Agriculture, Hasanuddin University, Makassar

Email: rahmawatysosek@gmail.com

Abstract. In Indonesia, especially in South Sulawesi, one of the machines used for planting is rice transplanter planting machine. The effective use of rice seed grower machines will ensure better rice productivity, namely increased production and income. The purpose of this study was to compare rice farming income between rice transplanter planting system with manual moving planting and to analyze whether planting technology moved Rice Transplanter more profitable than manual moving planting. The research was conducted in Sidoraharjo Village, Sukamaju District, North Luwu Regency. The analysis method used is the analysis of farm income and the analysis of Return Cost Ratio (R/C). The results of the analysis on the comparison of rice farming income, especially for farmers who use the rice transplanter system is greater when compared to the manual system. The R/C value of agriculture with Rice Transplanter system is 3.63 while the manual system is 2.82. Both agricultural systems are feasible to implement but farms with Rice Transplanter systems have higher feasibility value than manual systems.

1. Introduction

In Indonesia, especially in South Sulawesi, one of the machines used for planting is the Rice Transplanter rice seed planting machine. The effective use of rice seed planting machines will ensure better rice productivity, namely increased production and income. The effectiveness and efficiency of planting rice seeds using this push type of rice seed planting machine will affect the good or bad growth of rice plants.

Agricultural progress in developed countries is measured by the high productivity of the labor force, and all efforts are directed towards increasing this productivity. This principle is not yet suitable to be applied in developing countries. The labor factor is the production factor that is the most limited in number in developed countries, while in Indonesia, labor is a factor of production which is very large in number compared to land and capital. [1].

The phenomenon that has occurred so far is that the rice planting process using the Rice Transplanter is more efficient, so the North Luwu Regency government prepares Rice Transplanters for use by farmer groups. However, there are still farmer groups that do not use it, because some farmer groups do not believe that the use of Rice Transplanters can increase production and there are also farmer groups that believe that the use of Rice Transplanters in rice production can be increased and besides that production costs can provide savings in rice farming costs.

Based on the description above, the researchers are interested in conducting research with the title "Comparison of Rice Farming Income with a Rice Transplanter and Manual Moving Planting System (Case Study in Sidoraharjo Village, Sukamaju District, North Luwu Regency, South Sulawesi



Province)". The purpose of this study was to compare the income of rice farming between the Rice Transplanter transplanting system and manual transplanting.

2. Research Methods

The research was conducted in Sidoraharjo Village, Sukamaju District, North Luwu Regency, South Sulawesi Province. The location selection was based on the consideration that this village was one of the villages that were encouraged to use Rice Transplanters, the research implementation lasted for three months, from September to November 2017.

Respondents were determined by random sampling method. The number of rice farmers in the research location was 497 people. From the number of rice farmers, 10% were taken as the sample in this study, namely 50 farmers who were assigned as samples in this study with a division of 25 farmers who used the Rice Transplanter transplanting system, 25 farmers who used the manual transplanting system. This is considered representative enough to carry out a comparative analysis of the two types of farming, according to (Arikunto 2010) the part of the population studied and represents the characteristics of the population [2]. If the study population is less than 100, the sample taken is all, but if the study population is more than 100 then the sample can be taken between 10-15% or 20% or more.

Analysis of farm income, the analysis model used to determine the income of rice farming with the transplanting system Rice Transplanter and manual transplanting (Soekartawi, 2003) is [3]:

$$\begin{aligned} \pi &= TR - TC \\ TR &= P \cdot Y \\ TC &= FC + VC \end{aligned}$$

Information :

- Π = Income Of Farming
- TR = Total Revenue
- TC = Total Cost
- Y = Amount of Farm Production
- P = Price
- FC = Fixed Cost
- VC = Variabel Cost

3. Results and Discussion

3.1 Identity of Respondents

The identity of the respondent farmer describes a condition or condition as well as the status of the farmer. The identity of a farmer can provide information about the state of his farming, especially in increasing production and the income they earn. It is very important to know the identity information of respondent farmers because it is one of the things that can facilitate the research process.

Based on the results of interviews conducted with 50 respondents in Sidoraharjo Village, Sukamaju District, North Luwu Regency, a variety picture was obtained. The following is the identity of the respondent farmers who were collected in the field.

Table 1. Identity of Respondents

No.	Identity of Respondents	Farmers who use Rice Transplanters		Farmers who use manual systems	
		Total (People)	Percentage (%)	Total (People)	Percentage (%)
1	Age				
	28 – 37	11	44	5	20
	38 – 47	2	8	11	44

	48 – 57	7	28	9	36
21	58 – 66	5	20	0	20
2	Education				
	Elementary School	7	28	17	68
	Junior High School	8	32	4	16
	High School	10	40	4	16
	College	0	0	0	0
	Other	0	0	0	0
3	Profession				
	Main Work				
	1.Farmers	25	100	24	96
	2.PPA	0	0	1	4
	Side Jobs				
	1.Nothing	21	84	20	80
	2.Farm Workers	4	16	3	12
	3.PBP	0	0	1	4
	4.Farmers	0	0	1	4
4	Number of family dependents				
	1 – 2	13	52	14	56
	3 – 4	12	48	9	36
	5 – 6	0	0	1	4
	7 – 8	0	0	1	4
5	Farming Experiences				
	5 – 11	10	40	15	60
	12 – 18	3	12	2	8
	19 – 25	12	48	1	4
	26 – 32	0	0	1	20
	33 – 46	0	0	2	8
6	Land Area				
	0,23 – 0,61	10	40	13	52
	0,62 – 0,99	7	28	6	24
	1,00 – 1,37	4	16	3	12
	1,38 – 1,75	4	16	3	12
7	Land ownership status				
	Property	23	92	21	84
	Rent	0	0	0	0
	Sakap	2	8	4	16

Table 1 shows that the age of the respondents is between 28 - 66 years. In the 38 - 44 year age category, the largest number of respondents was 12 respondents who used the manual planting system. According to Wirusuharjo (1996) states that the productive age is in the range of 15 - 64 years and the non-productive age is 0-14 years and the non-productive age is ≥ 65 years [4]. Farmers who are of productive age will be able to receive information and innovation easily and quickly, especially to develop their farming. Productive age farmers are expected to be able to read and take advantage of opportunities to increase their farming activities.

The last level of education of farmer respondents, especially in Sidoraharjo Village, Sukamaju District, North Luwu Regency, which shows that the education of farmers who use the most Rice Transplanter system is SMA, which is 10 people and the most manual system is SD, which is 17 people. So it can be concluded that the level of education has effect on the use of the Rice Transplanter planting machine. The existence of differences in the level of education shows an influence on the level of the farmer's mindset, this is in accordance with the opinion (Bakir, Z, Manning C. 1984) which states that the higher the education level of farmers, the wider the mindset will be and of course the faster it will accept the innovations presented [5].

The basic job types of respondents were almost entirely farmers with a percentage of 96%. While in the type of side jobs vary in farmers who use Rice Transplanter has a side job farmworkers have a percentage of 16% while in farmers who use the manual planting system there is 1 farmer who has a job as a rice seed grower and farmers with a percentage of 4%. The number of family dependents is the largest percentage in farmers who use Rice Transplanter and manual on the category of number of family dependents 1 - 2 people. Category level of farming experience in farmers who use Rice

Transplanter at intervals of 19 - 25 years with a percentage of 48% and in manual planting farmers the level of farming experience at intervals of 5 - 11 years with a percentage of 60%. The land area of farmers who use Rice Transplanter has the highest percentage of 40% at intervals of 0.23 - 0.61 ha and in farmers who use manual planting systems that have the highest percentage of 52% at intervals of 0.23 - 0.61 Ha. Agricultural productivity is increasingly widespread land ownership so farmers or producers can allocate production factors based on the principle of technical efficiency and price efficiency [6].

Table 2. Overview of Rice Farming Management of Farmers using Rice Transplanter Machine and Manual Farmer in Sidoraharjo Village, Sukamaju District, North Luwu Regency, 2018.

No	Description of activities	Rice Transplanter Farming	Manual Farming
1	Land Processing	The beginning of the reversal of the soil into chunks then crushed and spilled the soil and then leveled the mud.	Initially, the soil was turned into chunks and then crushed and scattered the soil and leveled the mud.
2	Seeding	Make beds 5 cm ⁸ 10 cm high with the length you need. Before sowing the seeds are soaked for 24 hours, and drained for 24 hours. Sow the seeds into the tray (seedling box) that has been prepared on the bed. Apart from the seed box as well as a seed sowing tool, it is used when there are very few trays. The age of the rice seeds used is 15-20 days after scattering.	Make beds 5 cm to ⁸ cm high with the length you need. Before sowing the seeds are soaked for 24 hours, and drained for 24 hours. Sow the germinated seeds directly on the bed. The age of the rice seeds used is 20-25 days after scattering.
3	Planting	The land is in a slightly watery condition or in a macak condition, aiming to make it easier for the floating transplanter machine to be able to adjust the height to the depth of the seeds to be planted. Planting uses a planting machine (transplanter) which is operated by the operator by running it slowly while directing neatness in planting in a rice field area.	The land is not flooded to make planting lines easier. Ticks are a tool that functions to determine spacing. Planting is carried out on land where the spacing has been made by means of seedling depth between 1 - 5 cm, not too deep, the conditions of the plants are parallel and neat.
4	Pemeliharaan	Irrigation is very important, water can be entered into the paddy fields after planting, and the water discharge is adjusted according to the age of the plants. After planting, embroidery is done when the plants are under 10 days old with the aim of uniform growth. The first fertilization can be done, when the rice plants are 7-15 days after planting and the second fertilization is 20-30 days after planting. Spraying of pests and ¹⁷ ases is carried out on rice plants 1 - 7 days after planting, 20-30 days after planting, 50 - 60 days after planting.	Irrigation is carried out 3 - 7 days after planting, and the water discharge is adjusted according to the age of the plant. After planting, embroidery is done when the plants are under 10 days old with the aim of uniform growth. The first fertilization can be done, when the rice plants are 7-15 days after planting and the second fertilization is 20-30 days after planting. Spraying of pests and dis ¹⁷ es is carried out on rice plants 1 - 7 days after planting, 20-30 days after planting, 50 - 60 days after planting.
5	Harvest	Harvesting is done using a harvesting machine.	Harvesting is done using a harvesting machine.
6	Post-Harvest	After harvesting the unhulled rice is transported to the house or factory using a motorbike taxi. In addition to selling crops, farmers also process them into rice for consumption.	After harvesting the unhulled rice is transported to the house or factory using a motorbike taxi. In addition to selling crops, farmers also process them into rice for consumption.

²⁷ Based on Table 2, regarding the management of rice farming using the Rice Transplanter machine and the manual method, there are several differences, from processing to planting.

3.2 Analysis of Rice Farming Income

Analysis of rice farming income is a part that greatly influences the success of each farmer in carrying out activities, so that in analyzing rice farming income it can be seen by using the formula farm income = total income - total costs (fixed costs + variable costs). Based on the attachment, namely the results of the calculation of farm business income, it can be presented the average cost of income per hectare of rice farming for farmers using the Rice Transplanter system with a manual system which can be presented in Table 2.

Table 3. Farming Income, Comparative Analysis of Rice Transplanter Rice Revenue with the Manual System of Sidoraharjo Village, Sukamaju District, North Luwu Regency, South Sulawesi Province, 2017.

No	Farming Description	Rice Transplanter Farming	Manual Farming
		Value (Rp/Ha)	Value (Rp/Ha)
	Production	3.691 Kg	2.842
	Selling Price	Rp 4.500	Rp 4.500
	Revenue (1)	23.401.839	18.271.515
I. Fixed Cost			
1.	Land Tax	70,000	70,000
2.	NPA	135,011	123,458
	Sub Total (2)	205,011	193,458
II. Variabel Cost			
1	Seed	328.390	382.938
2.	Fertilizer		
	- NPK	620.274	676.917
	- Urea	534.811	550.903
	- SP36	490.524	338.938
3.	Pestiside		
	- Ragen	245.315	286.613
	- Bestnoid	97.290	130.785
	- Laser	124.360	143.658
	- Furadan	243.081	272.663
	- Ragen	502.840	650.240
4.	Labor		
	- Land Processing	1.200.000	1.200.000
	- Seeding	-	-
	- Planting	500.000	733.450
	- Maintenance	-	-
	- Harvest	390.031	304.680
	- Transportation	780.061	609.050
	Sub Total (3)	6.224.404	6.280.681
	Total Cost (2+3)	6.429.415	6.474.139
	Income (1 – 4)	16.972.424	11.821.053

Table 3, shows that the net income of farmers respondents for rice farming system Rice Transplanter is greater than the net income for rice farming manual system. Although the production cost for rice farming system with Rice Transplanter system is more lace than the production cost for manual system rice farming, but the acceptance of rice farming with Rice Transplanter system is greater, so that the average income of rice farmers with Rice Transplanter system is greater than the average income of rice farmers with Manual system. The net income for rice with Rice Transplanter system is Rp 16,972,424-/Ha, while the income of manual system rice farmers is Rp 11,821,053-/Ha.

This is because the production produced in rice farming with the Rice Transplanter system is higher than the production produced in manual system rice farming, the average production produced by rice farmers with a Rice Transplanter system of 3,691.26 g / Ha, while in rice farming manual system of 2,842 Kg / Ha. Mecipun there is a difference in the amount of production, the selling price of rice grain rice transplanter system and rice manual system remains the same. The price of rice grain rice transplanter system has a uniform one with a price of Rp. 4,500/Kg and a manual system rice grain price with a price of Rp. 4,500/Kg.

3.3 Analisis Revenue Cost Ratio (R/C Ratio)

Analysis of revenue cost ratio (R/C ratio) is a comparison between acceptance and total cost in rice farming and the application of rice transplanter system with manual system. R/C ratio analysis is an analysis that divides between revenue and total cost.

If the result of R/C ratio is greater than 1 then it is feasible, on the contrary if the calculation of R/C ratio is less than 1 then the effort is said to be unfit to do. Based on the calculation of revenue cost ratio, especially farmers who use rice transplanter system with manual system, it can be presented through the table as follows:

Table 4. Comparison of Revenue Cost Ratio per hectare using Rice Transplanter System with Manual System per hectare in sidoraharjo village, Sukamaju District, North Luwu Regency, 2017.

No	Description	Rice Transplanter System	Manual System
1	Revenue (Rp)	23.401.839	18.271.515
2	Total Cost (Rp)	6,429,415	6,474,139
3	R/C Ratio	3.63	2.82

Based on the results of RC ratio analysis shows that the revenue cost ratio of both systems used is the same as or profitable because both systems exceed the number 1, namely in the rice transplanter R/C system the ratio is 3.63 and the R/C ratio in the manual planting system is 2.82. However, the rice transplanter system has a larger R/C when compared to the manual system because the rice transplanter system is seen from the production level is greater when compared to the manual system. So in this study the rice transplanter system is more profitable when compared to manual systems. This is in accordance with the opinion of Soekartawi (1995:68) which states that if the R/C ratio > 1, then the business run is profitable or worth developing. If seen from the results of R/C ratio rice farming planting system moved Rice Trasplanter more profitable than the manual system, because the system Rice Transplanter has a value of >1 [7].

4. Conclusions

Based on the comparison of the advantages of using the technology of planting system moved Rice Transplanter with manual planting moved it is known that the acceptance of farmers farming with rice transplanter system is higher than the manual system. In addition, the total cost incurred is also less than the manual system. R/C value of farming with Rice Transplanter system is 3.63 while manual system is 2.82. Both farming systems are feasible to apply but farming with Rice Transplanter system has a higher feasibility value than manual system.

References

- [1] Mubyarto 1994 *Pengantar Ekonomi Pertanian* (Jakarta: LP3ES)
- [2] Arikunto S 2010 *Prosedur Penelitian: Suatu Penelitian Praktik*, EdisiRevisi Jakarta: Rineka Cijalan
- [3] Soekartawi 2003 *Analisis Usaha Tani* (Universitas Indonesia)
- [4] Wirosuhardjo 1996 *Pengembangan Sumber Daya Manusia* (Jakarta: Rineka Cipta)

- [5] Bakir S Z and Manning C 1984 *Angkatan kerja di Indonesia: partisipasi, kesempatan dan pengangguran* (Diterbitkan untuk Pusat Penelitian Kependudukan UGM [oleh] Rajawali)
- [6] Shinta A 2011 *Ilmu Usahatani* (Malang: Universitas Brawijaya Press)
- [7] Soekartawi 1995 *Prinsip Dasar Ekonomi Pertanian Teori Dan Aplikasinya* (Jakarta: PT. Raja Grafindo Persada)

ORIGINALITY REPORT

15%

SIMILARITY INDEX

8%

INTERNET SOURCES

14%

PUBLICATIONS

5%

STUDENT PAPERS

PRIMARY SOURCES

1

moam.info

Internet Source

2%

2

R Fachrizal, N M Ginting, Nurliah, A Rizal, N Panga. "The potential of sago processing in supporting farmers' welfare", IOP Conference Series: Earth and Environmental Science, 2022

Publication

2%

3

www.eajournals.org

Internet Source

1%

4

Sri Handayani, Irmayani Noer, Rini Desfaryani. "Development Strategy of Organic Rice in Lampung Selatan Regency", IOP Conference Series: Earth and Environmental Science, 2022

Publication

1%

5

S P Mulya, I N D M Hikmah, H Widjaja, Widiatmaka. "Multi-criteria Analysis for Determining Primary Commodities at Jasinga District, Bogor Regency, Indonesia", IOP Conference Series: Earth and Environmental Science, 2019

Publication

1%

6	Submitted to Universitas Jenderal Soedirman Student Paper	1 %
7	iopscience.iop.org Internet Source	1 %
8	bmcplantbiol.biomedcentral.com Internet Source	1 %
9	Ruining Li, Yanli Yu. "Impacts of Green Production Behaviors on the Income Effect of Rice Farmers from the Perspective of Outsourcing Services: Evidence from the Rice Region in Northwest China", Agriculture, 2022 Publication	1 %
10	Submitted to Universitas Islam Indonesia Student Paper	1 %
11	A N Tenriawaru, I Summase, R M Rukka, N M Viantika, M Arsyad, A Amiruddin, A B Hadman. "Coffee agribusiness and income farmers", IOP Conference Series: Earth and Environmental Science, 2020 Publication	<1 %
12	Riswani, Yunita, Thirtawati. "Prospects and Feasibility of Implementation of Agricultural Transformation for Food Crops on Sub Optimal Land in Ogan Ilir Regency, South Sumatra", IOP Conference Series: Earth and Environmental Science, 2022 Publication	<1 %

13	acris.aalto.fi Internet Source	<1 %
14	Z Noormansyah, E Cahrial. "Efficiency of Production Factors and Constraints of Organic Rice Farming at Rainfed Rice", IOP Conference Series: Earth and Environmental Science, 2020 Publication	<1 %
15	Ibrahim L. Kadigi, Khamaldin D. Mutabazi, Damas Philip, James W. Richardson et al. "An Economic Comparison between Alternative Rice Farming Systems in Tanzania Using a Monte Carlo Simulation Approach", Sustainability, 2020 Publication	<1 %
16	Saadah, A Amrullah, Darwis, T Ibrahim, L Fudjaja, S Bulkis, A S Dzulhajrah, D P Wahyudi. "Internal and external factors of rice farming in the coastal area", IOP Conference Series: Earth and Environmental Science, 2020 Publication	<1 %
17	Yong Choll Kim. " Effects of thermoperiodism on tuber formation in under controlled conditions ", Plant Physiology, 1961 Publication	<1 %
18	pdfs.semanticscholar.org Internet Source	<1 %
19	repository.usahidsolo.ac.id	

<1 %

20

Enci Safira, Rosmawaty Rosmawaty, Syamsul Alam Fyka. "The Effect of Village Fund Allocation Assistance (ADD) on Seaweed Farmer's Income in Langere Village Bonegunu District North Buton Regency", Jurnal Ilmiah Membangun Desa dan Pertanian, 2022

Publication

<1 %

21

[docplayer.net](https://www.docplayer.net)

Internet Source

<1 %

22

text-id.123dok.com

Internet Source

<1 %

23

www.iosrjournals.org

Internet Source

<1 %

24

Anang Sulisty, Khaerunnisa, Suhaena. "Food Security and Welfare Of Lowland Rice Farmers Analysis In The Border Area Of North Kalimantan", IOP Conference Series: Earth and Environmental Science, 2022

Publication

<1 %

25

J M Petrina, F K Alfarisy, I Andriyani, L P Suciati. "The Impacts of Change Forests into Agricultural Land to Social Economic Conditions Society in the Upstream of Bedadung Watershed", IOP Conference Series: Earth and Environmental Science, 2020

<1 %

26

Lola Rahmadona, Rizka Endah Agustin.
"Income Efficiency Of Cassava Farming In
Ciseeng Sub-District Bogor Regency", Journal
of Agri Socio Economics and Business, 2021
Publication

<1 %

27

journal.umpo.ac.id
Internet Source

<1 %

28

Rahajeng Putu Widiani Priswita, Sapja
Anantanyu, Komariah, Mth Sri Budiastuti.
"Potential of Ratoon Rice Farming
Development in Central Java Province,
Indonesia for Climate Change Adaptation and
Mitigation", IOP Conference Series: Earth and
Environmental Science, 2020
Publication

<1 %

Exclude quotes On

Exclude matches < 5 words

Exclude bibliography On