# COMPARATIVE ANALYSIS OF RICE FARMER INCOME USING AND NOT USING COMBINE HARVESTER HARVESTER TOOLS IN PADANG VILLAGE, MANGGENG DISTRICT, ACEH BARAT DAYA DISTRICT

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**Abstract**

This research aims to analyze the comparison of the income of rice farmers who use combine harvesters and farmers who do not use combine harvesters in Padang Village, Manggeng District, Southwest Aceh Regency. The methods used are observation data collection techniques, direct interviews using questionnaires while data analysis uses quantitative descriptive methods. The results of the research show that there is a difference in rice farming income between farmers who use combine harvesters and farmers who do not use combine harvesters. 95% test (0.05) comparative testing of the income of rice farmers who do not use combine machines and the income of rice farmers who use combine machines, shows a significant difference between the test values, where the t test shows that tcount = 5.70. Meanwhile ttable is 1.666. Because tcount > ttable, namely 5.70 > 1.666, it means that Ho is rejected and Ha is accepted, so it can be concluded that farmers' income with the use of combine machines will cause an increase in income. Thus, the difference between the income of rice farmers who do not use combine machines and the income of rice farmers who use combine machines at the 0.05 level, namely 0.000 < 0.05, is significantly different and causes an increase in income in Padang village, Manggeng District, Aceh Barat Daya Regency.

**Keywords:** ***costs, revenue, income, rice farmers***

## 1. INTRODUCTION

Until now, Indonesia is still referred to as an agricultural country. For the Indonesian people, agriculture is not just farming that produces food. Agriculture in Indonesia has become part of culture, as well as the lifeblood of most of its people and is one of the sectors that has a strategic role in the development of the national economic structure. According to (Mahananto, 2009 in Marianne, 2016). In the national economy, the agricultural sector plays a role as a producer of food, producer of raw materials for the industrial sector, source of foreign exchange, source of investment and supplier of labor. Lowland rice is a crop that is generally cultivated by many households in rural areas. Mechanization is one way to replace human labor using certain tools. In farming, Mechanization is used in agriculture to speed up processing time and simplify various phases of agricultural work. The use of mechanization can save time or reduce the amount of labor compared to manual systems which use a lot of labor and take a long time to complete farming. Progress and development of farming mechanization starts from stage to stage (Nurmala, 2012).

Farming activities require labor, which at certain stages requires a large number of workers. The number of workers is large because this stage is carried out almost at the same time in an area, especially in that area planting is carried out simultaneously. Stages such as tilling the land, planting and harvesting usually require a lot of labor and are rotated between one land and another. Therefore, the role of agricultural mechanization is really needed at certain times, to make work easier and time efficient.

**Table 1** Area of Rice Plantation in Southwest Aceh District 2017-2022

| No | Year | Area (Ha) |
|---|---|---|
| 1 | 2017 | 15,536.50 |
| 2 | 2018 | 13,688 |
| 3 | 2019 | 9,370 |
| 4 | 2020 | 15,536.50 |
| 5 | 2021 | 15,536.50 |

Source: BPS Southwest Aceh Regency (2022)

From the table above, the area of the entire Southwest Aceh region shows that rice farming yields in this region are quite high. The area of rice fields in Southwest Aceh Regency in 2021 is 15,536 Ha. In the last five years from 2017 to 2021. Farming activities require labor, which at certain stages requires a large number of workers. The number of workers is large because this stage is carried out almost at the same time in an area, especially in that area planting is carried out simultaneously. Stages such as tilling the land, planting and harvesting usually require a lot of labor and are rotated between one land and another. Therefore, the role of agricultural mechanization is really needed at certain times, to make work easier and time efficient. The use of agricultural machinery aims to increase human work capacity in the agricultural production process (Sukirno, 2015).

The use of combine harvesters is expected to ease farmers' work during harvest and be able to reduce harvest costs. The combine harvester can carry out several work activities, namely cutting, threshing and shredding rice in a work process (Hasibuan, 2016). Ananto et al (2013) revealed that there was quite a large yield loss, namely during harvesting it was 9% and threshing was 5%. The combine harvester harvesting tool is claimed to be able to reduce yield losses. Several studies show that crop yield losses using combine harvesters range from 2-4% (Amrullah 2019; Purwantini and Susilowati 2018; Aldillah 2016; Amare and Endalew 2016). The use of combine harvesters has a further impact on farmer welfare.

Farmers in Padang village are now starting to use combination harvesters as a substitute for hand harvesting tools. Practicality, ease of use and economic value of farming activities are the main reasons why farmers switch to harvesting machines. Based on the background and problems above, the author is interested in conducting research entitled: Comparative Analysis of Income of Rice Farmers Who Use and Do Not Use Combine Hervester Harvesting Tools in Padang Village, Manggeng District, Southwest Aceh Regency "The aim of this research is to analyze the comparative income of lowland rice farmers who use and do not use combine harvesters in Padang Village, Manggeng District, Southwest Aceh Regency."

The development of social welfare today shows that there are citizens whose basic needs have not been fulfilled properly because they have not received social services from the state. As a result, there are still citizens who experience obstacles in the implementation of their social functions and are unable to live a life in a decent and dignified manner. Social Welfare is the fulfillment of rights to basic needs, the implementation of social welfare, comprehensively and professionally, as well as the protection of society. To avoid abuse of authority in administering social welfare, Law Number 11 of 2009 concerning social welfare also regulates registration and licensing as well as sanctions for institutions that organize social welfare. Therefore, Intensive regional expansion has now developed in Indonesia as a way to equalize development and improve community welfare, such as in the fields of economics, finance, public services and government apparatus, including socio-political aspects, territorial boundaries and security and has become the

main pillar. development in the long term. Therefore, the public bureaucracy is obliged and responsible to provide fast, precise and professional public services. The services provided by the government to the community must of course pay attention to the dynamics of community development, especially in the era of globalization where information is increasingly easy to obtain. This makes people intelligent and critical. Increasing people's reasoning and critical power makes people more courageous in conveying their demands. This condition must of course be balanced by the government by being more responsive and aspirational towards various community demands.

Based on historical factors and the desire to accelerate development with services closer to the community, the hopes contained so far crystallized into a proposal for the formation of Humbang Hasundutan Regency through the formation of the Humbang Hasundutan Regency Establishment Committee. The issuance of Law Number 22 of 1999 concerning Regional Government, which is complemented by Government Regulation Number 129 of 2000 concerning Requirements for the Establishment and Criteria for Expansion, Abolition and Merger of Regions, has become an opportunity for the emergence of discourse on the need for expansion through the formation of Regencies. Armed with the desire to aspire to improve community welfare, this opportunity was utilized appropriately by the community in the Humbang Hasundutan area through the Humbang Hasundutan Regency Establishment Committee. It turns out that in line with the demands of modern progress, it has been able to foster community aspirations to propose the expansion of North Tapanuli Regency, through the proposal to establish Humbang Hasundutan Regency. The genuine aspirations of the community were welcomed and facilitated by the North Tapanuli Regency government, as well as the support of the North Tapanuli Regency DPRD, which then received the support of the Governor of North Sumatra and the DPRD of North Sumatra Province. Law Number 9 of 2003 concerning the Establishment of South Nias, Pakpak Bharat Regency and Humbang Hasundutan Regency in North Sumatra Province. The success of forming a new Regency has further spurred improvements in the performance of state servants and the role of the community in realizing accelerated development and improving public services to create stability in social life and improve community welfare.

The problem that is of serious concern to the government at the moment is that many regions after being expanded do not provide a level of welfare to their people, some are even worse than before they were expanded. In some cases, the phenomenon of regional expansion tends to shift into a means of sharing power for political interests, which is in direct contrast to the aim of regional expansion, namely for the welfare of the community. However, regional expansion is not just a plan whose progress can be quickly felt. It is possible that regional expansion will actually lead to a setback in development because it is vulnerable and tends to have to start from the starting point for all the needs of a government formation. Based on the description of the background of the problem, researchers are interested in researching the title "The Effectiveness of Regional Expansion on the Welfare of the People of Humbang Hasundutan Regency".

## 2. LITERATURE REVIEW

### 2.1 Farmer

According to Hadiutomo (2012), farmers are people who carry out activities in the agricultural sector, including plantations, fields, rice fields, fisheries, etc.

a land cultivated with the aim of economic gain. Farmers can be differentiated based on the form of their activities, namely tenant farmers, tenant farmers, sharecropper farmers, pawnbroker farmers and farmers as farm laborers.

### 2.2 Rice plants

Yusuf (2010:7) rice is the main commodity which plays a role in fulfilling the basic carbohydrate needs of the population. The rice commodity has a major role in fulfilling the main food needs which increase every year as a result of large population growth, as well as the development of the food and feed industry.

### 2.3 Harvesting machine (Combine harvester)

According to Iswari 2012, a machine (combine harvester) is a rice harvesting tool that can cut the grain of standing plants, thresh and clean the grain while walking in the field. By using this rice harvesting machine, the use of labor does not require a large number of workers like using traditional tools. Using this rice harvesting machine requires quite a lot of money and trained experts who can operate this machine. Understanding the Combine Harvester is very important in managing modern food crop farming, by knowing the machine parts and how they work and their performance, management can be planned and managed using the combine harvester efficiently and economically. This will support the overall cultivation process mechanically and have advantages.

Since 2012, the government, through the State Revenue and Expenditure Budget (APBN) scheme, has attempted to facilitate the need for post-harvest agricultural mechanization facilities by providing agricultural technology assistance, one of which is assistance with combine harvester machines. The aim is to increase productivity through reducing crop waste. This is because during the rice harvesting process there is a high yield loss. Factors that influence the level of crop loss are rice varieties, harvest age, harvesting tools and methods, farmer and grower behavior, and the ecosystem. The highest yield loss occurs at the harvesting and threshing stages of rice (Nugraha et al, 2017). By using a Combine harvester, yield losses can be minimized to only 2.5% and a maximum of up to 5% because harvesting, collecting and threshing are combined into one activity stage. Based on BPS data for 2019 - 2021, there was an increase in the productivity of rice farming land in 2021 is 52.26 ku/ha, an increase of 0.98 ku/ha compared to 2020 and 1.12 ku/ha compared to 2019. The combine harvester harvesting machine is a rice harvester that can cut, thresh and clean rice in one process in the field. In this way, the harvesting time is shorter compared to using human labor (manual) and does not require a large amount of human labor as in traditional harvesting (Fitri, 2021).

### 2.4 Traditional

Traditional equipment is a set of tools that are still simple in nature, which have been used by a group of people for generations and are part of the technological system they have according to the cultural conception of Herawati and Sumintrasih (2018)

### 2.5 Income

Farming income is the difference between receipts and all costs, or in other words income includes gross income or total receipts and net income, gross income/total receipts is the overall production value of agricultural commodities before deducting production costs (Hastuti, 2007: 166).

## 3. RESEARCH METHODS

### 3.1 Research sites

This research was carried out in Padang Village, Manggeng District, Southwest Aceh Regency. This research was conducted for 2 months, namely October-November 2022. The focus was on rice harvesting activities that used combine havester harvesting equipment and farmers who did not use combine havester harvesting equipment when harvesting rice.

**Table 2** Livelihoods of Padang Village residents

| No | Livelihood | Volume |
|---|---|---|
| 1 | ASN | 54 |
| 2 | TNI/POLRI | 5 |
| 3 | Farmers/plantations | 76 |
| 4 | Rice Farmer | 72 |
| 5 | Self-employed | 88 |
| 6 | Trader | 10 |
| 7 | Fisherman | 1 |
| 8 | IRT | 51 |
| 9 | Laborer | 1 |
| 10 | Welder | 3 |
| 11 | Carpenter | 6 |
| 12 | Tailor | 2 |
| | Retired | 11 |
| Total | | 380 |

Source: Padang Village Data, 2022

### 3.2 Method of collecting data

The method used was a survey method and was carried out in Padang Village, Manggeng District, Southwest Aceh Regency. The rice farmers surveyed were determined purposively on the grounds that in Padang village there were farmers whose rice harvesting activities used combine harvesters and farmers who did not use combine harvesters. The number of respondents was 72 people consisting of 36 farmers who used a combine harvester and 36 farmers who did not use a combine harvester when harvesting rice. The data collected in this research is primary and secondary data. Primary data was obtained from direct interviews with respondents using a list of questions (questionnaire). Meanwhile, secondary data was obtained from the Department of Agriculture and BPS, as well as related institutions or agencies.

### 3.3 Data Analysis Method

This research uses the comparative analysis method which aims to determine the comparison of income between two sides, namely farmers who use combine harvesters and farmers who do not use combine harvesters. Farming income is the difference between income and all costs incurred by farmers. According to (Soekartawi, 2002) To calculate the total cost of farming, it can be calculated using the formula, namely:

$$\mathbf{TC = FC + VC}$$

Information :

T.C = Total Production Costs (Rp)

FC = Total Fixed Costs (Rp)

VC = Total Variable Costs (Rp)

To calculate farming income, you need to multiply the production obtained by the selling price. To calculate it, it is formulated as follows:

**TR = PxQ**

Information :

TR = Total receipts (Rp)

P = Production price (Rp)

Q = Production (Rp)

To calculate net income or profits, farmers can use the following formula:

**Π = TR – TC**

Information :

Π = profit / net income from farming that uses harvesting/manual equipment

TR = Revenue from farming that uses harvesting/manual equipment

TC = total cost of farming using harvesting/manual equipment

To determine whether there is a difference in the level of income of farmers who harvest using combine hervester harvesting equipment and those who do not use combine harvester harvesting equipment, the difference of two averages approach is used. This test was carried out using a paired sample t-test using SPSS version 25 software. According to Sunyoto (2011) in Ginting (2013), the aim was to test whether two paired samples had significantly different means or not. The test criteria are as follows:

Using significant value / P-Value

- If the value is significant / P-Value < 0.05; soHorejected and Ha accepted
- If the value is significant / P-Value > 0.05; soHo is accepted and Ha is rejected

1. H_o: There is no real difference in the income of farmers who use combine harvesters and those who do not use combine harvesters.
2. H_a: There is a real difference in the income of farmers who use combine harvesters and those who do not use combine harvesters.

## 4. RESULTS AND DISCUSSION

### 4.1 Respondent Characteristics

Below we will present a general description of the respondents who are the objects of this research. The respondents in this research were lowland rice farmers in Padang Village, Manggeng District, West Aceh Regency. The characteristics of the respondents which are the main object of this research include gender, age, education level and average income of the respondents which are presented respectively in the following table:

**Table 1** Characteristics of Farmers Based on Gender in Padang Village, Manggeng District, Southwest Aceh Regency.

| No | Gender | No Combine | | Using Combine | |
|---|---|---|---|---|---|
| | | Frequency (org) | Percentage (%) | Frequency (org) | Percentage (%) |
| 1 | a. Man | 33 | 91.7 | 23 | 63.9 |
| 2 | b. Woman | 3 | 8.3 | 13 | 36.1 |
| | Total | 36 | 100 | 36 | 100 |

Source: Primary Data (processed, 2023)

Table 1 explains that based on gender the respondents studied consisted of 56 men (78%) and 16 women (22%). In this case, the number of men is greater than women. This comparison will have an impact on the availability of male labor, especially labor in the agricultural sector. The role of women is also important because women are synonymous with better accuracy than men. The differences between women and men are natural so they cannot change and are universal. These biological differences provide indications and implications that the two types have different roles and tasks. Humans, both women and men, have different natures according to their respective functions (Budiman, 2016).

**Table 2** Characteristics of Farmers by Age in Padang Village, Manggeng District, Southwest Aceh Regency

| No | Age | No Combine | | Using Combine | |
|---|---|---|---|---|---|
| | | Frequency (org) | Percentage (%) | Frequency (org) | Percentage (%) |
| 1 | 20 - 30 years | 15 | 42.0 | 10 | 28.0 |
| 2 | 31- 40 years old | 13 | 36.0 | 17 | 47.0 |
| 3 | > 40 years | 8 | 22.0 | 9 | 25.0 |
| | Total | 36 | 100 | 36 | 100 |

Source: Primary Data (processed, 2023)

Based on the table above, the age of the respondents is very diverse, from 31-40 years old there are 24 people (33%), 30 people aged 31-40 years (42%), 18 people aged > 40 years (25%). A farmer's age greatly determines overall performance. Farmers who are relatively young will have better physical abilities and productivity than older farmers. However, an older farmer will have experience that a young farmer does not have. It would be better if a farming business combines or combines old and young farmers. Age is said to be productive if they are 15-64 years old (Nurhasikin 2016). Apart from that, farmers still work at an old age because they do not have old age security (pension),

**Table 3** Characteristics of Farmers based on education in Padang Village, Manggeng District, Southwest Aceh Regency

| No | Level of education | No Combine | | Using Combine | |
|---|---|---|---|---|---|
| | | Frequency (org) | Percentage (%) | Frequency (org) | Percentage (%) |
| 1 | Completed elementary | 13 | 36.1 | 12 | 33.3 |
| 2 | school/equivalent | 10 | 27.8 | 11 | 30.6 |
| 3 | Completed high school/equivalent | 13 | 36.1 | 13 | 36.1 |
| | Graduated from high school/equivalent | | | | |
| | Total | 36 | 100 | 36 | 100 |

Source: Primary Data (processed, 2023)

Furthermore, the table above explains that 25 people (35%) had completed elementary school/equivalent education, 21 people had completed secondary school/equivalent (29%), 26 people had completed high school/equivalent (36%). The aim of education level is to see a person's ability or skills in managing their farm or their ability to absorb various knowledge. A person's level of education also influences their mindset and way of acting. For example, the ability to process and utilize farming products is influenced by the education level of the farmer himself. Education greatly determines the level of competence of farmers in carrying out agricultural activities (Manyamsari & Mujiburrahmad 2014). Low education, apart from having implications for lack of coordinated agricultural planning, will also affect other types of work that farmers can do in an effort to increase income.

**Table 4** Characteristics of Farmers' Farming Experiences in Padang Village, Manggeng District, Southwest Aceh Regency

| No | Business Experience | No Combine | | Using Combine | |
|---|---|---|---|---|---|
| | | Frequency (org) | Percentage (%) | Frequency (org) | Percentage (%) |
| 1 | 1-5 Years | 0 | 0 | 0 | 0 |
| 2 | 6-10 Years | 26 | 72.0 | 25 | 69.0 |
| 3 | 11-15 Years | 9 | 25.0 | 11 | 31.0 |
| 4 | >15 Years | 1 | 3.0 | 0 | 0 |
| | Total | 36 | 100 | 36 | 100 |

Source: Primary Data (processed, 2023)

Table 4 above explains the characteristics of respondents based on farming experience. The majority of respondents with 6-10 years of farming experience were 51 people (71%), 21 respondents with 11-15 years of farming experience (29%).

**Table 5** Characteristics of the Number of Dependent Farmers in Padang Village, Manggeng District, Southwest Aceh Regency

| No | Amount of Responsibility | No Combine | | Using Combine | |
|---|---|---|---|---|---|
| | | Frequency (org) | Percentage (%) | Frequency (org) | Percentage (%) |
| 1 | 1-2 People | 3 | 8.3 | 4 | 11.1 |
| 2 | 3-4 People | 20 | 55.6 | 23 | 63.9 |
| 3 | 5-6 People | 13 | 36.1 | 9 | 25.0 |
| 4 | >6 People | 0 | 0 | 0 | 0 |
| | Total | 36 | 100 | 36 | 100 |

Source: Primary Data (processed, 2023)

Table 5 above explains the characteristics of respondents based on the number of dependents, while respondents with 1-2 dependents were 7 people (10%), respondents based on the number of dependents, while respondents with 3-4 dependents were 43 people (60%) and respondents based on the number of dependents, there were 22 respondents (30%) with 5-6 dependents.

## 4.2 Income from Rice Farming Business Activities in Padang Village, Manggeng District, Southwest Aceh Regency

Farming analysis was carried out by calculating the level of income and to determine the Income Analysis of rice farmers who use combine machines and those who do not use combine machines in Padang Village, Manggeng District, Southwest Aceh Regency. The analysis carried out in this research was on all farmers who carry out rice farming in the village. The analysis carried out refers to the concept of income for costs incurred, namely cash costs and total costs. Cash costs are costs incurred in cash, such as costs for purchasing production facilities and labor costs. Total costs are cash costs plus imputed costs. The costs that are taken into account are costs that are not incurred in cash, such as the use of family labor and depreciation of equipment.

## 4.3 Types of Costs for Rice Farmers in Padang Village, Manggeng District, Southwest Aceh Regency

The costs incurred by farmers for rice farming consist of several types of costs, namely fixed costs, variable costs and labor costs, as in the following table below:

**Table 6** Types of costs incurred by farmerspaddy fields inPadang Village, Manggeng District, Southwest Aceh Regency

| Description | Farmers No Using Combine (Rp) | Farmer Using Combine (Rp) |
|---|---|---|
| Fixed cost<br>Total<br>Average | <br>2,641,667<br>73,380 | <br>2,839,505<br>78,875 |
| Variable Costs<br>Total<br>Average | <br>437,910,000<br>12,164,167 | <br>538,746,250<br>14,965,174 |
| Total cost<br>Total<br>Average | <br>440,551,667<br>12,237,546 | <br>541,585,755<br>15,044,049 |

Source: Primary Data (processed, 2023)

Based on table 6, it can be seen that the amount of variable costs (for seeds, pesticides/medicines and fertilizer) varies depending on the area of land and the number of seeds planted by the farmer. The total costs incurred in agricultural businesses without using a combine are IDR.12,237,546,-, while the total costs incurred in agricultural businesses that use combines are IDR.15,044,049,-.

### 4.4 Analysis of the Acceptance of Rice Farmers in Padang Village, Manggeng District, Southwest Aceh Regency

Analysis of farmer income is the income obtained by farmers from the results of harvesting the harvested rice. Farmers' income is obtained from the harvest multiplied by the selling price (harvested rice production) by the farmers. Where the volume of rice harvested varies depending on the area of agricultural land and the amount of rice planted, as in the following table below:

**Table 7** Revenue obtained by farmersrice inPadang Village, Manggeng District, Southwest Aceh Regency

| Description | Farmers No Using Combine (Rp) | Farmer Using Combine (Rp) |
|---|---|---|
| Number of Sales Production | 128.155 | 171,450 |
| Selling price | 5,400 | 5,400 |
| Reception<br>Total<br>Average | 692,037,000<br>19,223,250 | 925,830,000<br>25,717,500 |

Source: Primary Data (processed, 2023)

Based on the table above, you can see thatthe total revenue from agricultural businesses without using a combine is IDR.19,223,250,-, while the amount of revenue spent on agricultural businesses that use combines is IDR.25,717,500,-. Based on the research results, it was found that the acceptance of farmers who used a combine was greater because when harvesting the cut rice it did not spread everywhere or get scattered because the rice was cut neatly by the cutting machine on the combine, this resulted in higher harvests compared to farmers without a combine. . Meanwhile, farmers' income without a combine is lower because cutting using a sickle means that much of the cut rice is scattered or scattered. This reduces crop yields.

### 4.5 Analysis of Rice Farmers' Income in Padang Village, Manggeng District, Southwest Aceh Regency

Analysis of farmer income is the result of a reduction between the total income received by farmers and the total costs incurred. The calculation analysis is as follows:

**Table 8** Income earned by farmersrice inPadang Village, Manggeng District, Southwest Aceh Regency

| Description | Farmers No Using Combine (Rp) | Farmer Using Combine (Rp) |
|---|---|---|
| Reception<br>Total<br>Average | 692,037,000<br>19,223,250 | 925,830,000<br>25,717,500 |
| Cost<br>Total<br>Average | 440,551,667<br>12,237,546 | 541,585,755<br>15,044,049 |
| Income<br>Total<br>Average | 251,485,333<br>6,985,704 | 384.244.245<br>10,673,451 |

Based on the table above, you can see thatthe total income from agricultural businesses without using a combine is IDR.6,985,704-, while the amount of income spent on agricultural businesses that use combines is IDR.10,673,451,-. Comparison of Income of Rice Farmers Using Combines and Not Using Combines in Padang Village, Manggeng District, Southwest Aceh Regency Comparison of farming between farmers who use combine harvesters and farmers who do not use combine harvesters can be seen in table 8.

**Table 9** Comparison of farmer incomerice inPadang Village, Manggeng District, Southwest Aceh Regency

| Description | Farmers No Using Combine (Rp) | Farmer Using Combine (Rp) |
|---|---|---|
| Reception<br>Total<br>Average | 692,037,000<br>19,223,250 | 925,830,000<br>25,717,500 |
| Cost<br>Total<br>Average | 440,551,667<br>12,237,546 | 541,585,755<br>15,044,049 |
| R/C | 1.57 | 1.71 |

Source: Primary Data (processed, 2023)

Based on the table above, you can see that uRice harvesting carried out by farmers who use combine harvesters and farmers who do not use combine harvesters is worthy of development because it has an R/C value above 1. However, farming using combine harvesters is more profitable with an RC value of 1. 71 compared to farms that do not use combine harvesters with an RC value of 1.57.

### 4.6 Hypothesis Testing Differences in Income of Rice Farmers Using Combines and Not Using Combines in Padang Village, Manggeng District, Southwest Aceh Regency (t Test Data)

The t test is used to determine whether each independent variable partially has a significant influence on the dependent variable. It can also be said that if tcount > ttable or -tcount < -ttable then the result is significant and means Ho is rejected and Ha is accepted. Meanwhile, if tcount < ttable or -tcount > -ttable then the result is not significant and means Ho is accepted and Ha is rejected.

**Table 10**Statistical Testing (testt) AgainstLowland Rice Farmers Using Combines and Not Using Combines in Padang Village, Manggeng District, Southwest Aceh Regency

| Group | Average income | T-Test | Sig. | Conclusion |
|---|---|---|---|---|
| Farmers who use combines | 10,673,451 | 5.70 | 0,000 | There is a difference |
| Farmers who do not use combines | 6,985,704 | | | |

Source: Primary Data (processed, 2023)

Based on table 9, it can be explained that the average income of farmers who use combines is IDR. 10,673,451,- while the average income of farmers who do not use combine is Rp. 6,985,704,-. From the results of statistical tests using the independent sample t-test, it shows that the resultst test can be seen that tcount = 5.70. Meanwhile, ttable is 1.666. Because tcount > ttable, namely 5.70 > 1.666, it means that Ho is rejected and Ha is accepted, so it can be concluded thatFarmers' income with the use of combine machines will lead to an increase in income.Thus, the difference between the income of rice farmers who do not use combine machines and the income of rice farmers who use combine machines at the 0.05 level, namely 0.000 < 0.05, is significantly different and causes an increase in Padang income, Manggeng District, Southwest Aceh Regency.

According to Wati (2015), the use of a rice harvester (combine harvester) has a positive impact on grain quality when compared to harvesting using manual or traditional tools. The use of a machine (combine harvester) is considered a form of efficiency, namely that harvesting can be faster and cheaper, by using a rice harvester machine (combine harvester) which the government hopes will be able to increase the productivity obtained by farmers. The results of this research are in line with research by Al-Asri (2018) entitled Comparative Analysis of Income of Rice Farmers Using Combine Hervester Machines Using Traditional Methods in Gampong Blang Meurah Dua Pidie Jaya. The results of the research show that the average income of rice farmers in Meurah Dua District in one harvest consists of the income of Combined Rice farmers being greater and that of traditional rice farmers being smaller. Based on the analysis above, this difference in revenue is caused by the difference in production results obtained by bailed rice farmers, namely Combine Herverster farmers and traditional farmers in Meurah Dua District.

Furthermore, Kurnia's research (2022) with the title comparative analysis of rice farming income between farmers who use combine harvesters and farmers who do not use combine harvesters in the district. Ujungjaya, district. Sumedang. The research results show that there is a difference in rice farming income between farmers who use combine harvesters and farmers who do not use combine harvesters. The rice farming income obtained by farmers who use combine harvesters is greater, while the farming income of farmers who do not use combine harvesters is smaller. Rice farming using combine harvesters is more profitable (RC value 1.95) compared to farming without using combine harvesters (RC value 1.34).

## 5. CONCLUSIONS

### 5.1 Conclusion

Based on the research results, the purpose of this research is answeredin the 95% test (0.05), the comparative test of the income of rice farmers who do not use combine machines and the income of rice farmers who use combine machines, shows a significant difference between the test values, wheret test can be seen that tcount = 5.70 while ttable is 1.666. Because tcount > ttable, namely 5.70 > 1.666, it means that Ho is rejected and Ha is accepted, so it can be concluded thatFarmers' income with the use of combine machines will lead to an increase in income.Thus, the difference between the income of rice farmers who do not use combine machines and the income of rice farmers who use combine machines at the 0.05 level, namely 0.000 < 0.05, is significantly different and causes an increase in Padang income, Manggeng District, Southwest Aceh Regency.

### 5.2 Suggestion

1. With this research, we know that by using a combine machine the rice harvest will be greater than using the traditional harvest process, but this has an impact on reducing employment opportunities for the surrounding community.
2. It is hoped that this research will provide information for farmers in running rice farming. Farmers are expected to pay more attention to the planting process according to recommendations, selecting seeds and post-harvest handling well so that the efforts made will get results in accordance with what is expected, the greater the income. obtained, the greater the benefits obtained.

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