Production and farm business income comparative analysis on rice fields in watersheds with non-watersheds at Lanna Village, Parangloe sub-district, Gowa Regency

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Abstract. Natural resources, which optimally and rationally utilized, aims to increase the people’s welfare. Nevertheless, the wise use of natural resources is part of the maintenance in the watersheds area (DAS). This study wants to: 1) identifying the rice farmers’ income and how much cost they spend, which located in watersheds or non-watersheds areas; 2) to discover the comparative of farm business income in watersheds or non-watersheds area. This study conducted in Lanna Village, Parangloe Sub-district, Gowa Regency. The population used in this study is all farmers involved in watersheds and non-watersheds area, and 30 farmers have chosen to be the sample. This study used the income analysis and independent sample t-test. The income analysis result shows that the farmer’s income in the watershed area is Rp23.833.435,72. Meanwhile, farmer’s income in the non-watershed area numbered at Rp22.867.569,71. The assumed T-Equal Variance value is 0,848 with Sig. (2-tailed) is 0,404 or greater than 0,05. In conclusion, there’s no income difference between farmers in the watershed and non-watershed area.

1. Introduction

The increasing agriculture products, especially food, are one of the government’s agendas to develop the agricultural to be a tough sector, which caused by its necessary role in people’s lives and income, especially for farmers. A tough agricultural sector to build security food guides to fulfill the needs of food by people, which supports by production capability [1].

Farmers’ income level, in general, is impacted by several components, such as total production, selling price, and production costs. Paddy is one of the good prospectus products which can increase farmer’s income. This can motivate farmers to develop and boost their production in expect to obtain a maximum selling to fulfill their daily needs [2].

Optimization of rice productivity in paddy fields is one of the opportunities to increase national grain production. This is possible when associated with rice yields in this agroecosystem is still diverse between locations and not optimal. The average rice production is 4.76 - 7 t / ha. Not yet optimal rice productivity in paddy fields, partly due to: a) low fertilizer efficiency; b) ineffective pest control has not been effective; c) the use of poor-quality seeds and selected varieties are less adaptive; d) Kalium nutrient deficiency and microelements; e) physical properties of the soil are not optimal; f) weed control is less optimal [3].
The optimal and rational use of natural resources aims to improve the welfare of the community. The wise use of natural resources in accordance with the rules of sustainability will not only improve the welfare of the community but will also get sustainable benefits. Therefore, the wise use of natural resources is part of the watershed management effort [3].

Watershed (DAS) in spatial perspective is part of the face of the earth, the water flowing into the river in question when it rains A watershed (DAS) is a place with a physical barrier in the form of mountains where rainwater that falls precisely is in an area bordered by mountains and gives an impact on the use of the surrounding land. In the watershed, there are characteristics obtained from rainwater that falls on land use. This is characterized in the Jeneberang River Basin in Gowa Regency, South Sulawesi. The most striking characteristic, of course, is agricultural land where water is needed in this activity. In addition to providing water for the surrounding community, the river can also be used as a transportation infrastructure as well as a source of water for agriculture and life around it. This is because the geological and geomorphological conditions allow for water storage and the continuation of agricultural activities [4].

Gowa Regency is one of the regencies that has a fairly extensive watershed, one of which is located in the Parangloe District, namely the Jeneberang River. The Jeneberang watershed is used as farming land by the surrounding community, which is a source of community income. In addition to the Watershed farming in Parangloe District, there are also non-watersheds paddy farming. The reason for choosing the Jeneberang watershed location as a research site is because this location is quite unique, where farmers use the Watershed as a place of business if the water is receding.

2. Methodology

This research was conducted in the Lanna Village, Parangloe District, Gowa Regency. The selection of the place of this research was carried out deliberately (purposive) with the consideration that in the Village Lanna, District Parangloe, Gowa Regency, there are rice farmers in the watershed and non-watershed areas. This research was conducted for a month, namely from April to May 2019.

The population in this study were all farmers in Parangloe District, Gowa Regency, which were divided into farmers in the watershed area and farmers in the non-watershed area. While the sampling in this study was done deliberately (purposive) using a simple stratified sampling system (stratified sampling). The population of farmers is divided into two populations, which are based on farmers in the watershed and non-watershed areas. Then from each population, 15 samples were taken, bringing the total sample to 30 people.

Data analysis was carried out qualitatively and quantitatively. Qualitative analysis is used to find out the general description of paddy farming and farming production processes in the study area, while quantitative analysis is carried out to find out the amount of production and income of paddy rice farming. This study uses three analytical tools, which are as follows:

a. Normality test
Testing data normality using the Shapiro-Wilk Test of Normality in the SPSS program. According to [5] the basis for decision making can be based on probabilities (Asymptotic Significance), namely:
1. If the probability is > 0.05, then the distribution of the regression model is normal.
2. If the probability is < 0.05, then the distribution of the regression model is not normal.
b. Independent-Sample T-Test
Hypothesis testing with the help of SPSS is Independent Sample T-Test. Independent Sample T-Test is used to test the significance of the difference between the two groups' averages. This test is also used to test the effect of independent variables on the dependent variable. The basis for decision making from this test [5] is:
a. If the sig two value is tiled > 0.05, then H0 is accepted
b. If the sig two value is tiled <0.05, then H0 is rejected
3. Results and discussion

3.1. Normality Test with Shapiro-Wilk
To determine the data used normally distributed using Shapiro-Wilk. Based on the normality test using the SPSS application, data are found in Table 1.

Table 1. Normality Test with SPSS of DAS and Non-DAS farmers in Lanna Village, Parangloe District, Gowa Regency, 2018.

| Tests Of Normality | Kolmogorov-Smirnov | Shapiro-Wilk |
|--------------------|--------------------|--------------|
|                    | Statistic | Df | Sig. | Statistic | df | Sig. |
| DAS                | .215      | 15 | .061 | .889      | 15 | .065 |
| Non Das            | .156      | 15 | .200 | .964      | 15 | .760 |

Source: Processed primary data, 2019.

Table 1 shows that the Sig. in the Shapiro-Wilk column, the value for watershed farmers is 0.065, which means the value is more than 0.05, so it can be said that the data is normally distributed. Likewise, with non-watershed farmers, Sig. in the Shapiro-Wilk column greater than 0.05, that is equal to 0.760, so it is said that the data is normally distributed, or that means receiving Ho.

3.2. Independent-Sample T-Test
The independent t-test, in principle, compares the averages of two groups that are not related to each other with the goal of whether the two groups have the same average or not. An Independent t-test can be seen in Table 2.

Table 2. Comparative Analysis of T-Tests for Watershed and Non-Watershed Farmer Income in Lanna Village, Parangloe District, Gowa Regency, 2018.

| Independent Sample T-Test | Income | Equal Variances Assumed | Equal Variances Not Assumed |
|----------------------------|--------|-------------------------|----------------------------|
| Levenes’ Test for Equality of Variances | F      | .475                    |                            |
| Sig. | .504 |                        |                            |
| T    | .848 | .848                    |                            |
| Df   | 28   | 27.235                  |                            |
| Sig. (2-tailed) | .404 | .404                    |                            |
| t-test for Equality of Means | Mean Difference | 9658666.0087 | 9658666.0087 |
| Std. Error Differences | 1139117.882 | 1139117.882 |
| 95% Confidence Lower | -1367511.20 | -1370469.06 |
| Interval of the Difference | Upper | 3299243.214 | 3302201.078 |

Source: Primary Data, 2019.

Table 2 shows that there are two values of t, and the significance level is Equal Variance assumed, and Equal Variance not assumed. Equal Variance assumed means that the two population variants are identical, and Equal Variance is not assumed that the two population variants are not identical. To determine this the F test was used. F is 0.475; it means that Ho is accepted that the two population variants are identical (Equal Variance assumed). Because sig F has the Equal Variance assumed
decision, then the t-test uses the Equal Variance assumed. T value of Equal Variance assumed is 0.848 with Sig. (2-tailed) is 0.404 or greater than 0.05, so it is decided that there is no difference in income between DAS farmers and Non-DAS farmers.

4. Conclusions
Based on the results of the independent t-test, it was decided that there was no difference in income between watershed farmers and non-watershed farmers.

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