Agribusiness Journal
*Url:*http://usnsj.com/index.php/AJ
*Email: info@usnsj.com*



# Analysis of The Efficiency Allocativeof The Tabela Rice Farming System in Tondowolio Village, Tanggetada Sub-District, Kolaka

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ARTICLE INFO

ISSN: 2548-2211
Vol. 3, No. 2, December 2020
URL : https://www.usnsj.com/index.php/AJ/article/view/1368



**Abstract**

This research aims to determine the efficiency of the use of factors (seeds, fertilizers, pesticides, the number of workers) allocatively in the wetland rice farming system in the Tondowolio Village, Tanggetada District, Kolaka Regency; This is to determine the risk of lowland rice farming with a table system in Tondowolio Village, Tanggetada District, Kolaka Regency. This research was conducted in Tondowolio Village, TanggetadaSubdistrict, Kolaka Regency, using an analysis of allocative efficiency and farm risk. Results: The seeds with an NPMx / Px value of 499.9> 1 so that the use of seeds in the research area was not efficient, the allocative efficiency of fertilizers with an NPMx / Px value was 6.18> 1 so that the use of fertilizers in the research area was not efficient, the allocative efficiency of pesticides with a value NPMx / Px of 1357.56> 1 so that the use of seeds in the research area is not efficient, the allocative efficiency of HOK (labor) with an NPMx / Px value of -237.75 <1 so that the use of seeds in the research area is inefficient. Farm risk analysis obtained a production risk value of 0.41, a price risk of 0.008 and a risk of profit of 0.41. The value of production risk, price risk, and profit risk is directly proportional to the risk faced by farmers, the greater the coefficient of variation obtained, the greater the risk that must be borne by farmers, and vice versa.

**Keywords:** Allocative Efficiency, Farming Risk, Rice Farming.

## A. Background

The agricultural sector is one of the components of national development towards food self-sufficiency in order to alleviate poverty. The important role of the agricultural sector in national development includes as an absorber of labor, contributing to Gross Domestic Product (GDP), sources of foreign exchange, industrial raw materials, sources of food and nutrition, as well as driving the movement of other economic sectors. In a narrower environment, agricultural development is expected to increase farmer people's access to production factors including sources of capital, technology, superior seeds, fertilizers, and distribution systems, so that they have a direct impact on improving farmer welfare (Apriantono, 2007). Farming activities aim to increase productivity so that profits are higher. Production and productivity cannot be separated from the production factors owned by farmers to increase the production of their crops. The low income received is due to the low level of labor productivity. One of the causes of low labor productivity is the slow increase in real wages of agricultural workers (Manning and J. Surya, 1996). One of the efforts made to increase rice productivity is by improving the quality of farming, namely planting methods, planting systems that are currently widely used by Indonesian farmers, namely the direct seed planting system (Tabela) and the transplanting system (tapin). Although the transplanting system is a cropping system that has been used for a long time, many farmers still use this cropping system. Many farmers who initially used the transplanting system (tapin) have left the planting system and switched to the direct seed planting system (Prasetyo, 2010).

## B. Methodology

*1. Data analysis technique*

The data analysis technique used in this study was allocative efficiency. The efficiency test is used to see whether the input or production factors used in the wetland rice farming system in the Tondowolio Village, Tanggetada District, Kolaka Regency are efficient or not. The efficiency used in this research is allocative efficiency (seeds, fertilizers, pesticides, and labor).

*2. Calculating Allocative Efficiency*

Efficiency is an effort to use the smallest possible input to get the maximum production. Price efficiency is achieved when the ratio between the marginal productivity value (NPMx) is the same as the input cost (Px). (Soekartawi, 2002). Mathematically it can be written as follows.

$$\text{NPMx} = \text{Px} \text{ or} \frac{NPM_x}{P_x} = 1$$

$$\text{NPMx} = \text{PMx} \,.\, \text{Py}$$

$$PM = \frac{b.Y.P_x}{X}$$

Where :

b = Regression Coefficeient
Y = Production
Py = Price of Production
X = The Number of Input Utilization
Px = Price of Input

## C. Finding and Discussion

*1. Analysis of Average Farming Costs*

The variable costs used in farming activities in Tondowolio Village consist of costs for seeds, fertilizers, pesticides, and labor. The amount of costs incurred by farmers can be seen in Table 1 as follows :

Table 1. The Average Cost of Rice Farming Per Hectare Per Planting Season in Tondowolio Village, Tanggetada District, 2020.

| No. | List of Input | Cost (Rp) | Percentage (%) |
|---|---|---|---|
| 1 | Seed | 145.833 | 7,98 |
| 2 | Fertilizer | 812.500 | 44,47 |
| 3 | Pesticide | 300.000 | 16,42 |
| 4 | Men Hours | 568.750 | 31,13 |
| **Amount** | | **1.827.083** | **100** |

Source : Proceseed Data 2020

Based on the results in Table 1, it can be seen that the average use of variable costs for rice farming activities in Tondowolio Village is Rp. 1,827,083.3 / ha with the largest percentage found in the fertilizer component with a percentage of 44.47%, then the labor component (HOK) with a percentage of 31.13%, then the pesticide component with a percentage of 16.42%, and the lowest percentage was on the seed component with a percentage of 7.98%. For general explanation based on the average of each variable cost, it will be explained as follows :

a. Seed

The average use of seeds in the study area was 41.67 kg / ha with an average cost of one hectare of Rp. 145,833.3 / ha depending on the spacing used and the planting done by farmers and according to the habits of each growing season.

b. Fertilizer

Rice farmers in Tondowolio Village use various kinds of fertilizers in their farming activities, including urea and NPK fertilizers. The average use of fertilizers in the study area is 541.67 kg / ha with an average cost of one hectare of Rp. 812,500 / ha depending on the habits of each growing season.

c. Pesticide

The determining factor for success in rice farming activities is that farmers are able to produce good quality rice and are resistant to pests and diseases. One way that rice farmers in Tondowolio Village are controlling pests and diseases using pesticides. The average use of fertilizer in the study area is 6.67 liters / ha with an average cost of one hectare of IDR 300,000 / ha.

d. Men Hours

The use of labor for most of the rice farmers in Tondowolio Village comes from workers outside the family or commonly referred to as piece labor. The payment system is carried out by farmers by providing daily wages. The labor wage at the research location is set at Rp. 7,000, - per hour. The average use of labor is 9-10 people / ha with an average cost of one hectare of Rp. 568,750 / ha.

2. Analysis of the Efficiency Allocative on Production Factors

The efficiency of production factors in rice farming in Tondowolio Village, Kolaka Regency can be determined by calculating the NPM ratio of a production factor with the price of each factor NPMx / Px. The calculation used for the analysis of the allocative efficiency of production factors includes the coefficient value. The results of efficiency calculations can be seen in Table 4.11.

Tabel 2. Allocative Efficiency Analysis of the Use of Rice Production Factors in Tondowolio Village, Tanggetada District, 2020.

| Variabel | bxi | Y | Py | x | Px | PMx | NPMx | NPMx/Px |
|---|---|---|---|---|---|---|---|---|
| Seed | 206.47 | 3452.22 | 3811.11 | 41.671 | 45833.3 | 17105.3 | 65533370.5 | 499.37 |
| Fertilizer | 206.47 | 3452.22 | 3811.11 | 541.67 | 812500 | 1318.18 | 5023728.98 | 6.18 |
| Pesticide | 206.47 | 3452.22 | 3811.11 | 6.67 | 300000 | 106863.5 | 407268553 | 1357.56 |
| Men Hours | -832.49 | 3452.22 | 3811.11 | 81.25 | 568750 | -35480.72 | -135220926 | -237.75 |

Sumber: Data primer yang telahdiolah, 2020

a. Allocative Efficiency of Seed
From the results of the analysis, it is known that NPMx / Px of seed use is 499.9 where the number is greater than 1, so the use of seeds in the research area is not efficient. This shows that the use of seeds of 41.67 kg / ha in the study area is not efficient. The high cost of rice seeds makes farmers use rice seeds to a minimum so that the cost of production facilities incurred is small. Farmers' knowledge of rice cultivation, especially in the use of seeds, resulted in inefficient use of seeds, considering that the average education of the respondent farmers was elementary school graduates.

b. Allocative Efficiency of Fertilizer
From the analysis, it is known that NPMx / Px of fertilizer use is 6.18 where the number is greater than 1, so that the use of fertilizer in the study area is not efficient. This shows that the use of pesticides of 541.67 kg in 1 hectare in the study area is not efficient. The use of pesticides in the research area is very intensive and has not been in accordance with the dose or dose. In 1 growing season, fertilization is carried out 2 - 3 times. Farmers believe that if pesticide fertilization is not carried out, the results of rice production are not good. Judging from the intensive use of fertilizers and not in accordance with the dosage, the use of fertilizers in the research area is not efficient. So that the use of pesticides can be optimal, it is necessary to increase the use of fertilizers, so as to increase production and income of rice farmers.

c. Allocative Efficiency of Pesticide
From the analysis, it is known that NPMx / Px of pesticide use is 1357.56, where the number is greater than 1, so the use of pesticides in the study area is not efficient. This shows that the use of pesticides of 6.67 kg in 1 hectare in the study area is not efficient. In 1 growing season, spraying is carried out 3-4 times. So that the use of pesticides can be optimal, it is necessary to increase the use of pesticides, so as to increase production and farmers' income.

d. Allocative Efficiency of Men Hours
From the analysis, it is known that NPMx / Px of labor use is -237.75 where the number is less than 1, so the use of labor in the research area is not efficient. This shows that the use of labor as much as 9-10 HOK in the farm production process from land processing to harvesting with a land area of 1 hectare in the study area is inefficient. In order for optimal use of labor, it is necessary to reduce the use of labor, so as to reduce rice production costs. In research areas that require the most labor, namely in the process of planting, competition and harvesting.

## D. Conclusion

Based on the research results, it can be concluded that the allocative efficiency of rice farming in Tondowolio Village was obtained :

a. Seeds with an NPMx / Px value of 499.9> 1 so that the use of seeds in the research area is not efficient so it needs to be added.
b. Fertilizer allocative efficiency with an NPMx / Px value of 6.18> 1 so that the use of fertilizer in the research area is not efficient so it needs to be added.
c. Pesticide allocative efficiency with a value of NPMx / Px of 1357.56> 1 so that the use of seeds in the research area is not efficient so it needs to be added.
d. HOK allocative efficiency (labor) with an NPMx / Px value of –237.75 <1 so that the use of seeds in the research area is inefficient so it needs to be reduced.

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Balai Pengkajian Teknologi Pertanian Sulawesi Tenggara Kendari.