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Productivity and Income Analysis of Red Onion Farming on Marginal Land in Kaswari Village South Kaledupa Sub-district, Wakatobi Regency

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Abstract

This research aims to (1) Find out the productivity of shallot farming on marginal land in Kaswari Village, South Kaledupa District, Wakatobi Regency (2) Find out the income of shallot farming on marginal land in Kaswari Village, South Kaledupa District, Wakatobi Regency. This research was carried out in January-May 2024. The sampling method was simple random sampling, with a total of 35 farmers. Based on the research results, it shows that (1) Analysis of the productivity and income of shallot farming on marginal land is usually lower than on fertile land due to various factors. Marginal land is land that has limitations for agricultural activities which affect farming productivity. The productivity of shallots obtained was 3,714 Kg/ha. (2) The total cost of shallot farming in Kaswari Village per season is IDR 955,865, where the total income from shallot farming activities is IDR 14,523,000, the income of shallot farmers in Kaswari Village is IDR 13,567,135.

Keywords: ***Productivity, Income, Farming, Shallots, Marginal Land*****.**

INTRODUCTION

Indonesia is a developing country whose economy relies on the agricultural sector. Indonesia's agricultural sector consists of six subsectors, namely livestock, fisheries, forestry, plantations, food crops, and horticulture (Hidayah and Sumanto, 2022). Agriculture has a strategic role in the development of the national economy and the fulfillment of people's basic

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needs. The strategic position of agriculture in economic development is clear, the contribution of agricultural production to national GDP decreased from 14.9% in 2010-2013 to 10.20% in 2015-2020 (Dudung, 2019).

Horticultural crop cultivation is one of the supports of the agricultural sector. One of the horticultural commodities grown by the Indonesian people is shallots (*Allium ascalonium*). Shallots are a vegetable commodity that *has a* high economic value in meeting national consumption, a source of farmer income and the potential for foreign exchange earnings. Therefore, it is not surprising that shallots have an important role in trade. Shallots are used as a seasoning for dishes and are beneficial for health, treating cancer and other dangerous diseases. Shallots also act as antioxidants that are very powerful against free radicals in the body (Istiqomah, *et al.,* 2018).

Onion farming also requires human resources supported by skilled and dedicated labor, optimal land integration, highly productive use of fertilizers and labor. Food needs can be achieved and met rationally (Widyantara, 2018). Public demand for shallots is increasing from year to year as the population and purchasing power increase. So that it must be balanced with the amount of production in order to meet demand. The size of the production quantity is influenced by various factors such as land area, fertilizer seeds, pesticides, irrigation systems, labor, climate and so on (Dahlianawati*, et al.,* 2020).

According to the Central Bureau of Statistics (2022), Southeast Sulawesi in the first quarter of 2023 produced 1,015 tons of shallots. The shallot production in Southeast Sulawesi Province is in the regions of Buton, Muna, Konawe, Kolaka, Konawe Selaan, Bombana, Wakatobi, North Kolaka, North Buton, North Konawe, East Kolaka, Konawe Islands, West Muna, Central Buton, South Buton, Kendari City, and Bau-Bau City.

Wakatobi, Southeast Sulawesi is one of the onion production centers in Indonesia. The determination was made by the Ministry of Agriculture of the Republic of Indonesia. According to the Regent of Wakatobi, Hugua, the soil texture on all the islands in Wakatobi is suitable for developing shallot plants. People on the islands of wangi-wangi, kaledupa, tomia, and binongko (also known as Wakatobi), which is one of the districts in Southeast Sulawesi Province, use Wakatobi shallots as their main crop. Geographically, Wakatobi district is a dry land with many rock outcrops scattered throughout the region. Nevertheless, Wakatobi ranks third in shallot production after North Kolaka and Buton (Diyanti, *et al.,* 2018). One of the advantages of Wakatobi shallots is the ability to grow in dry and rocky environments.

According to Nurmaidah (2023), which states that coastal sand land has the potential to be developed into agricultural land to increase shallot productivity. Marginal land usually has

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less fertile soil characteristics and environmental conditions that are not ideal for agriculture. This research is important to find out how marginal land optimization can be done to increase shallot production. This analysis can help find techniques or strategies that can increase shallot productivity on marginal land, for example by selecting superior varieties, using the right fertilizer, or cultivation technology. Farming on marginal land usually has its own risks and challenges. With income analysis, it can be known whether shallot cultivation on marginal land is profitable enough and can compete with cultivation on fertile land. This study can also evaluate the efficiency of resource use such as water, fertilizer, and labor as well as the long-term sustainability of farming on marginal land. The results of this study can serve as a basis for policy-making in supporting farmers on marginal land, either through technical assistance, subsidies, or extension to improve their welfare. In other words, this research is important for the productivity, efficiency and welfare of farmers in areas with limited arable land.

METHOD

The population of this study were all farmers who cultivate shallot farmers in Kaswari Village, South Kaledupa sub-district, Wakatobi Regency as many as 150 people. Determination of the sample was carried out using the simple random sampling method (simple random) with the Slovin formula with a total of 35 farmers.

The types and sources of data used in this research are primary data and secondary data. Data collection techniques are carried out by observation, interviews, and library techniques. The following is the data analysis used in this study:

1. Answering the first problem formulation, namely the analysis of the productivity of marginal land shallot farming, quantitative analysis is used using the Fitriyana formula (2021):

   Productivity of shallot farming on marginal land

   $$\text{Productivity} = \frac{\text{Jumlah Produksi (Kg)}}{\text{Luas Lahan (Ha)}}$$

   Description:

   Productivity = Productivity (Kg/Ha

   Total production = Red Onion Production (Kg)

   Harvest area = Onion harvest area (Ha)

2. Answering the second problem formulation, namely the analysis of shallot farming income on marginal land, quantitative analysis is used using the formula Soekartawi, *et al.* 2003:

$$\pi = TR - TC$$

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Description:

π = Total Income (IDR/Harvest Season)

TR = Total *Revenue* (Rp/Harvest Season)

TC = Total *Cost* (Rp/Harvest Season)

RESULTS AND DISCUSSION

How to Determine the Productivity of Marginal Land Shallot Farming

Farm productivity on marginal land is usually lower than on fertile land due to various factors. Marginal land is land that has limitations for agricultural activities, such as low soil fertility, water shortage, steep topography, or unfavorable climatic conditions.

Some of the factors that affect farm productivity on marginal land include:

1. Soil Quality, marginal lands often have poor soils with low nutrient levels, poor soil texture, and problems such as high acidity or salinity, making it difficult for plants to grow well.
2. Water Availability, lack of water or irrigation problems can limit plant growth. Marginal lands are often in areas where water is scarce or have poor drainage problems.
3. Extreme climatic conditions, such as very high or low temperatures, uneven rainfall or strong winds, can affect crop productivity on marginal lands.
4. Topography, hilly or steep land makes agricultural management more difficult and risky, including faster soil erosion.
5. Technology and Infrastructure, limited access to modern agricultural technology and supporting infrastructure such as roads, markets, and storage facilities can also reduce productivity.

Shallot Seedlings and Land Area

Based on data obtained from respondents in Kaswari Village, South Kaledupa Subdistrict, for shallot seeds obtained from fellow shallot farmers, they exchange seeds meaning that the seeds are free, and some farmers get assistance seeds obtained from the government distributed to these farmers. The use of shallot seeds can be seen in the table. The land area in this study is the area of the land settlement part used as a cultivation of shallot plants. The size of the land owned by farmers can directly affect the amount of production obtained and the costs incurred by farmers.

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Table 1 Use of Red Onion Seedlings and Land Area in Kaswari Village, South Kaledupa Sub-district, Wakatobi Regency 2024.

No.	Shallot Seedlings	Quantity (Kg)	Price (Rp)
1	Highest	61	1.525.000
2	Lowest	3	75.000
No.	**Land Area (Ha)**	**Number of Souls**	**Percentage (%)**
1	0,01-0,09	17	48.57
2	0,014-0,019	9	22.85
3	0,025-0,132	9	25.71

Source: Primary Data, 2024

Table 1 presents the following data;

1. The highest use of environmentally friendly shallot seeds was 61 kg and the lowest was 3 kg. The high and low use of seeds depends on the planting distance and land area owned by farmers. For farmers who have a large area of land, the number of seeds used is more than farmers who have narrow land.
2. That a small proportion of shallot farming respondents have a land area of 0.01-0.09 as many as 17 people (48.57%), a land area of 0.014-0.019 as many as 9 people (22.85%), a land area of 0.025-0.132 as many as 9 people (25.71%).

Onion Planting Cultivation

Human resources basically belong to individuals but the community in general can utilize the expertise, knowledge and experience as evidenced by the emergence of various innovations, especially in cultivating shallot plants. Based on the explanation above, the author will explain and show the stages in cultivating shallot plants, as follows:

1. The selection of shallot seeds is important for shallot farmers because good and healthy seeds are the basis for plant growth in order to grow and develop and produce optimally.
2. Soil Processing, the first thing to do in shallot cultivation is to process the soil first because in shallot cultivation, processing the soil is the longest stage. Processing of soil media is effective for increasing soil fertility and maintaining loose soil structure so that it can increase the weight of shallot bulbs.
3. The planting distance of shallots varies depending on the type of seedlings. Generally, the planting distances that are often used are 15x10 cm, 20x15 cm, 15x15 cm, and 20x20 cm. With this planting distance, it is expected to obtain large shallot bulbs with 4-7 gr

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per bulb. Shallots cannot be planted continuously in a year, the land can only be planted with shallots 2-3 times.

4. How to Plant Shallots, after the seeds and land are ready, the planting process can be done immediately. First, water the land until it is moist then make planting holes with a depth of about 5 cm and the distance between each planting hole is about 15 cm after that, place the seedlings in the planting holes and cover the planting holes with soil.
5. Fertilization, onion fertilization is done regularly to maintain nutrients in the soil. Supplementary fertilization can be done at 10 days to one month after the seedlings are planted.
6. Watering and Weeding is done when the seedlings are zero to 10 days old, watering is done twice a day. After the age of shallots is more than 10 days, watering is done once a day in the morning and evening. Weeding is done to reduce the weed population in the cultivation area. Pest and disease control, done by applying pesticides.
7. Harvesting Age Shallots grown on marginal land can be harvested when 66-75 days old. Harvesting shallots is done by pulling the shallot plants up to the roots. Then, tie the shallots and dry them for 2-3 days.

Production and Revenue

For more details on shallot production and revenue of respondent farmers in Kaswari Village, South Kaledupa Sub-district, Wakatobi Regency, see Table 2.

Table 2 Production and Receipt of shallots by respondents in Kaswari Village, South Kaledupa Sub-district, Wakatobi Regency 2024

No.	Variables	Characteristics	Red Onion
1	Production	Total Production (Kg)/season	830
		Average Production (Kg)/season	23,71
2	Reception	Revenue (Rp)/season	508.305.000
		Average Revenue (IDR)/season	14.523.000

Source: Primary Data, 2024

Table 2 shows that;

1. The shallot production obtained by farmers is 830 kg / season with an average shallot production of 23,71 kg / season. The results of this shallot production research are in

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line with research conducted by Ambo Upe and Tenri Sau (2018), stating that the highest production per hectare of shallot plants is 12.08 tons/ha.

2. The total revenue of shallot farming in Kaswari Village is 508,305,000 Rp/season with an average of 14,523,000 Rp/season. Compare with research conducted by Hasrul, *et al.* (2020) that the average production of shallots in Trans Koli District Oba City Tidore Islands is IDR 109,523/Kg. And the average selling price is IDR 30,000/Kg. Thus the average revenue obtained by these farmers per season is IDR 32,857,142.

Fixed Costs, Variable Costs, Productivity, and Revenue

The following is data on fixed costs, variable costs, productivity and income of shallot farming farmers in Kaswari Village, South Kaledupa Subdistrict, Wakatobi Regency 2024.

Table 3 Fixed Cost, Variable Cost, Productivity, and Revenue

No.	Variables	Description	Amount (Rp)
1	Fixed Cost	Hoe	25.714
		Crowbar	30.122
		Total (Rp)	55.836
2	Variable Cost	Seedlings	433.571
		Fertilizer	258.314
		Labor	208.143
		Total (Rp)	900.028
3	Productivity	Total Productivity (Kg)/ha	153.000
		Average (Kg)/ha	4.371
4	Revenue	Reception	14.523.000
		Cost	955.865
		Revenue	13.567.135

Source: Primary Data, 2024

Based on the table above, it can be explained as follows;

1. That the total cost incurred by marginal land shallot farming in Kaswari Village is a total of Rp55,836, where the cost is the depreciation cost of tools consisting of Hoes with an average of Rp25,714, and Crowbar with an average cost of Rp30,122.
2. That the total variable costs incurred by the seasonal marginal land shallot farm is Rp900,028 / season. Where the cost consists of the cost of Seeds, Fertilizers, Labor.

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Compare with research conducted by Hasrul, *et al.* (2020) the average fixed costs incurred by farmers in Trans Koli District Oba City Tidore Islands for shallot farming amounted to Rp333,734. While the average variable costs incurred by these farmers amounted to Rp1,727,404. And the total cost obtained from farmers per growing season amounted to Rp2,064,779.

3. That the total productivity of shallot farming in Kaswari Village obtained by farmers is 153,000 with an average of 4,371 kg/ha. Compare with the research of Amin, M. and Al-Jabri (2017) productivity without treatment (control), except for the treatment of 5 tons of cow manure per ha with a productivity of 9,820 Kg/ha. The highest productivity was 21,370 Kg/ha in the combination treatment of 4 tons of zeolite/ha and 5 tons of cow manure/ha, or 97.5% higher than the productivity in the control (10,820 Kg/ha). In the treatment of a combination of 4 tons of zeolite/ha and 5 tons of cow manure/ha showed a smaller productivity of 17,010 Kg/Ha. The highest shallot productivity in 2016 was in the treatment of 1 tom zeolite/ha without cow manure compost with a productivity of 18,860 Kg/Ha.
4. That the amount of revenue obtained by shallot farmers is Rp14,523,000 / season, where the amount of revenue is obtained from the income of Rp13,567,135 / season less the total cost of Rp955,865 / season. While income is obtained from the price of shallots per kilogram in Kaswari Village at a price of IDR 35,000 times the amount of production which is IDR 23,71 Kg / season. Compared to Research (Damanah 2008), Apriani (2011) and Pamusu, *et al* (2013). The total acceptance of shallot farmers ranges from Rp48,764,970 - Rp152,650,269 per hectare The largest acceptance is shown by research conducted by Apriani (2011). The total acceptance of shallots reached a value of more than Rp100,000,000 per hectare. Revenue together with the costs incurred by farmers will affect the income received by shallot farmers.

CONCLUSION

Based on the discussion in the results of this study, it can be concluded that the shallot productivity obtained is 4,371 Kg / ha. Meanwhile, the total cost of shallot farming in Kaswari Village per season is Rp955,865, where the total revenue from shallot farming activities is Rp14,523,000, the income of shallot farmers in Kaswari Village is Rp13,567,135.

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