

Analysis of Factors Affecting Income Red Onion Farming in Woha District, Bima Regency

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Abstrak

Penelitian ini bertujuan untuk mengetahui besar pendapatan usahatani bawang merah; dan untuk mengetahui pengaruh faktor luas lahan, modal, tenaga kerja, produksi, dan harga terhadap pendapatan usahatani bawang merah di Kecamatan Woha Kabupaten Bima. Penelitian dilakukan di Kecamatan Woha Kabupaten Bima, yang dilakukan dari bulan Agustus sampai dengan bulan September 2023. Jumlah sampel responden dalam penelitian ini adalah 34 orang yang ditetapkan dengan teknik Proporsional Random Sampling. Data primer dikumpulkan dengan teknik observasi, wawancara, dan dokumentasi. Sesuai dengan tujuan penelitian, maka analisis data yang digunakan adalah analisis regresi linier berganda dengan program SPSS. Hasil penelitian menunjukkan, rata-rata penerimaan usahatani bawang merah di Kecamatan Woha Kabupaten Bima per satu kali produksi adalah sebesar Rp. 70.100.735, rata-rata pengeluaran sebesar Rp. 39.267.367, dan rata-rata pendapatan sebesar Rp. 30.833.368. Secara simultan faktor luas lahan (X1), modal (X2), tenaga kerja (X3), produksi (X4), dan harga (X5) berpengaruh signifikan terhadap pendapatan (Y) usahatani bawang merah di Kecamatan Woha Kabupaten Bima, dengan koefisien determinansi (R2) sebesar 99,9%. Secara parsial faktor luas lahan (X1), modal (X2), produksi (X4), dan harga (X5) berpengaruh signifikan terhadap pendapatan (Y) usahatani bawang merah di Kecamatan Woha Kabupaten Bima, sedangkan yang tidak berpengaruh signifikan adalah faktor tenaga kerja (X3).

Kata Kunci: Bawang Merah, Luas lahan, Modal, Tenaga kerja, Produksi, Harga, Pendapatan

Abstract

This research aims to determine the income of red onion farming and to examine the influence of factors such as land area, capital, labor, production, and prices on red onion farming income in the Woha District, Bima Regency. The study was conducted in the Woha District, Bima Regency, from August to September 2023. The sample size of respondents in this study was 34 individuals determined through Proportional Random Sampling technique. Primary data were collected through observation, interviews, and documentation. To achieve the research objectives, multiple linear regression analysis was employed using the SPSS program. The research results indicate that the average revenue of red onion farming in the Woha District, Bima Regency, per production cycle is Rp. 70,100,735, with average expenses of Rp. 39,267,367 and average income of Rp. 30,833,368. Simultaneously, factors such as land area (X1), capital (X2), labor (X3), production (X4), and prices (X5) significantly influence the income (Y) of red onion farming in the Woha District, Bima Regency, with a coefficient of determination (R2) of 99.9%. Partially, factors such as land area (X1), capital (X2), production (X4), and prices (X5) significantly affect the income (Y) of red onion farming in the Woha District, Bima Regency, while labor (X3) does not have a significant impact.

Keywords: Red Onion, Land Area, Capital, Labor, Production, Prices, Income

INTRODUCTION

Development in the agricultural sector is absolutely necessary, considering that the majority of the population lives in rural areas and their main occupation is farming. Therefore, development is more directed at improving the lives of people in rural areas because farmers are a low-income group (Ichsan, 2018). In developing technology in the agricultural sector, the role of agricultural instructors is very crucial in guiding farmers. Extension workers have in-depth knowledge, proven practical skills, and strong commitment. A structured meeting plan and relevant outreach materials are critical to this effort. The quality of the application of technology or innovation taught to farmers has significant implications for the final results of agricultural production (Mularahman, et al. 2023)

Shallots are annual plants that form clumps and their bulbs are formed from layers of leaves that enlarge and stick together. Shallots are a horticultural commodity that is included in the spice vegetable category and is used as a food flavoring. Shallots can also be used as an ingredient in traditional medicine because red onions contain antiseptic effects. Shallots have high economic value (Listiono, 2016).

West Nusa Tenggara Province has many shallot farmers spread across various regions, one of which is Bima Regency. The quantity of shallot production in Bima Regency is quite large compared to other districts in West Nusa Tenggara Province. The total production of shallots in West Nusa Tenggara Province in 2018 was 2,128,849 tons/ha, in 2019 it was 1,882,542 tons/ha and in 2020 it was 1,857,954 tons/ha. In these three years (2018-2020), Bima Regency had the highest contribution to shallot production of the 10 districts/cities in West Nusa Tenggara Province, namely 1,624,012 tons/ha in 2018, 1,475,493 tons/ha in 2019, 1,362,924 tons/ha in 2020. The high amount of shallot production in Bima Regency is because it has large potential land for carrying out shallot farming compared to other districts/cities.

Bima Regency consists of 18 sub-districts, and one of the sub-districts which is a center for shallot production is Woha District. Shallot production in Woha District in three consecutive years (2018-2020) was 153,682 tons/ha in 2018, 143,387 tons/ha in 2019, and 138,425 tons/ha in 2020. Shallots are one of the sources the main livelihood of the people in Woha District and makes a huge contribution to the economy of the people in this area.

Woha District consists of 15 villages, but the centers for shallot production are Risa Village, Keli Village and Waduwani Village. The total population of shallot farmers in the three villages was recorded at 347 people. Apart from that, shallots are a very sensitive crop so farmers incur quite a lot of costs starting from land processing, planting, maintenance, pest and disease control, harvesting to post-harvest. Despite this, shallot farmers in Woha District, Bima Regency remain enthusiastic about trying to increase their production. Therefore, the efficiency aspect must receive serious attention, so that the costs incurred during the production process can be covered by the income obtained after harvest.

METHOD

In this research, the method used is the survey method. According to Singarimbun and Effendi (1991), generally, the meaning of survey is limited to research collected from samples of the population to represent the entire population. It was also said that the characteristic of survey research is that data is collected from a large number of respondents using questionnaires. One of the main advantages of this research is that it allows generalizations to be made to large populations.

The determination of Woha District as the research area was carried out using purposive sampling, with the specific consideration that in Woha District there are many

farmers who carry out shallot farming. Three samples were selected from 18 villages in Woha District, namely Risa Village, Keli Village and Waduwani Village. These three villages are centers of shallot production in Woha District.

This research will be carried out for two months, namely from August to September 2023.

Population is a generalized area consisting of objects or subjects that have certain qualities and characteristics determined by the researcher to be studied and then conclusions drawn. The population in this study were all shallot farmers in Woha District, Bima Regency, totaling 347 people spread across three villages, namely 143 people in Risa Village, 121 people in Keli Village, and 83 people in Waduwani Village. Sample farmers were taken as 10% of the population, totaling 34 people (farmers/respondents). This is in accordance with the opinion of Masaroh (2019), that if there are less than 100 subjects, it is better to take all of them so that the research is population research, while for a population with more than 100 subjects then the sample can be taken at 10-15%, or 20-25% or more. of the population.

The sampling technique in this research uses a proportional random sampling technique. This statistical sampling method is used to select random representation from populations that vary in size, but are proportional to the size of each subpopulation represented. Schematically, the sampling process in this research can be seen in Figure 2.

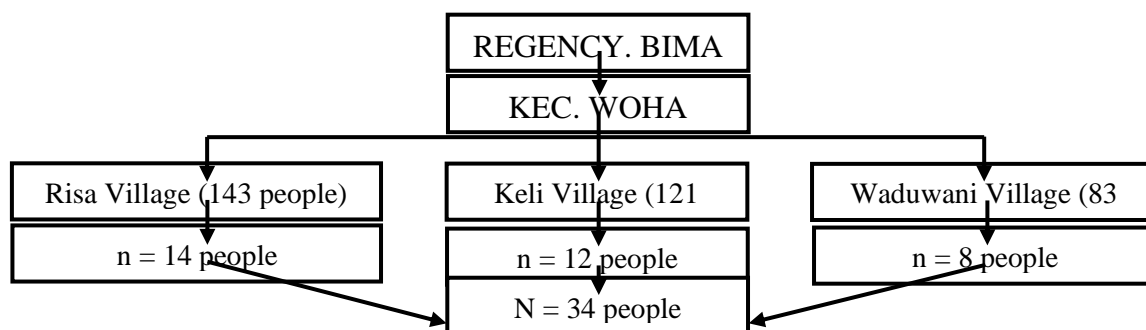


Figure 2. Scheme for Determining Research Samples

In this research, two types of data are needed, namely primary data and secondary data.

Primary data is data obtained directly from shallot farmer respondents in Woha District, Bima Regency.

Secondary data is data obtained from agencies/agencies that are closely related to this research, such as the Bima Regency Agriculture Service, Bima Regency Central Statistics Agency Office, Woha District Office, Risa Village Office, Keli Village and Waduwani Village.

In this research, data collection was carried out using the method:

1. Observation

Observation is data collection through direct observation of the conditions of the research location and shallot farmers in Woha District, Bima Regency.

2. Interview

Interviews are a direct question and answer process carried out by researchers with farmers using a questionnaire as a tool to get a general picture and explanation. The interview methods in question are open and closed interview methods.

3. Documentation

Documentation is data collection related to preserving images, searching, and library sources that support data in the field.

In this research, the variables measured are the independent variable and the dependent variable. The independent variables consist of land area (X1), capital (X2), labor (X3), production (X4), and price (X5), while the dependent variable is income (Y).

1. Land Area (X1)

In this research, what is meant by land area is the area used by farmers to carry out shallot farming expressed in hectares (Ha).

2. Capital (X2)

In this research, what is meant by capital is the amount of costs used by farmers in carrying out shallot farming which is expressed in rupiah units (Rp).

3. Labor (X3)

In this research, what is meant by labor is people involved in the onion farming production process, both labor within the family and labor outside the family.

4. Production (X4)

In this research, what is meant by production is the amount of shallot production produced by farmers in one production process expressed in quintal units (Kw).

5. Price (X5)

In this research, what is meant by price is the amount of money received by farmers from the sale of shallots per one kilogram (Kg).

6. Revenue (Y)

In this research, what is meant by income is the amount of money received by farmers from the sale of shallots in one production process.

The way to measure income is done using the following formula:

$$\pi = TR - TC$$

Information:

- π : Income (Income)
TR : Total Revenue (Total Revenue)
T.C : Total Cost (Total cost)

The data analysis steps are as follows:

In this research, the influence of the independent variables, namely land area (X1), capital (X2), labor (X3), production (X4) and price (X5), will be tested on the dependent variable, namely income (Y). The regression formula used is:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + e$$

Information :

- Y = Income
X1 = Land area
X2 = Capital
X3 = Labor
X4 = Production
X5 = Hprice
 μ = Term error
 $\beta_1 \beta_2 \beta_3 \beta_4 \beta_5$ = Kregression officer of X1 X2 X3 X4 X5
e = Normally distributed error with mean 0, objective

e calculation is assumed to be zero.

This research uses an associative hypothesis to examine the relationship between land area, capital, labor, production and price variables on the income level of shallot farmers in Woha District, Bima Regency. The statistical hypothesis tests used are as follows:

a) t test

The t test is used to determine the influence of each independent variable X1, X2, X3, X4, X5 individually/partially on variable Y (dependent). If the results from the SPSS software show a significance value for land area (X1) < 0.05 then H0 is rejected and Ha is accepted, meaning that the land area variable can explain the income variable. If the significance value of capital (X2) < 0.05 then H0 is rejected and Ha is accepted, meaning that the capital variable can explain the income variable. If the significance value of labor (X3) < 0.05 then H0 is rejected and Ha is accepted, meaning that the labor variable can explain the income variable. If the significance value of production (X4) < 0.05 then H0 is rejected and Ha is accepted, meaning that the production variable can explain the income variable. If the significance value of price (X5) < 0.05 then H0 is rejected and Ha is accepted, meaning that the price variable can explain the income variable.

b) F test

The F test is used to determine the effect of independent variables together on the dependent variable. In the context of this research, the F statistical test is used to test whether land area, capital, labor, production and price simultaneously (together) have an influence on the income of shallot farmers in Woha District, Bima Regency.

If the results of data processing using the SPSS program show a significance value of < 0.05 then H0 is rejected and Ha is accepted, which means that all independent variables can simultaneously explain the dependent variable significantly. Conversely, if the significance value is > 0.05 then H0 is accepted and Ha is rejected, this means that all independent variables are simultaneously unable to explain the dependent variable significantly.

c) R Test

The coefficient of determination test (R²) is used to see the magnitude of the influence, or the extent of the contribution of the independent variable to the dependent variable in the presence of multiple linear regression. The coefficient of determination value is between zero and one. A small value indicates that the ability of the independent variable to explain the dependent variable is also small/very limited. A large coefficient value (close to 1) can provide almost all the information needed to predict variations in the dependent variable.

RESULT

Respondent Characteristics

1. Respondent's Age

Table 1. Characteristics of Respondents Based on Age in Woha District, Bima Regency

No.	Age Category	Frequency	Percentage (%)
1	30-39	2	5.88
2	40-49	22	64.71
3	50-59	10	29.41
Total		34	100

Source: processed primary data, 2023

2. Respondent's Education

Table 2. Characteristics of Respondents Based on Education Status in Woha District, Bima Regency

Level of Education	Frequency (person)	Percentage (%)
elementary school	8	23.53
JUNIOR HIGH SCHOOL	5	14.71
SENIOR HIGH SCHOOL	13	38.24
S1	8	24
Total	34	100

Source: Primary data processed, 2023

3. Respondent's Family Dependents

Table 3. Characteristics of Respondents Based on Number of Family Dependents in Woha District, Bima Regency

Family Dependents (person)	Frequency (person)	Percentage (%)
0-1	6	17.65
3-Feb	20	58.83
6-Apr	8	23.52
Total	34	100

Source: Primary data processed, 2023

4. Respondent's Farming Experience

Table 4. Characteristics of Respondents Based on Shallot Farming Experience in Woha District, Bima Regency

Respondent (years)	Experience	Frequency (person)	Percentage (%)
1-4		0	0.00
5-9		27	79.41
10-16		7	20.59
Total		34	100

Source: Primary data processed, 2023

A. Shallot Farming System

Farmers carry out shallot farming because the results of shallot farming can improve their economy. The activity of cultivating shallots in Woha District, Bima Regency is no longer something new that they are doing, but has become the main occupation of the people in Woha District.

Shallots are a type of plant that is sensitive to weather changes and is also susceptible to disease, so farmers in Woha District, Bima Regency carry out their farming activities in various stages, with the hope that the shallots planted can grow fertile and be able to produce production. the maximum.

Shallot planting in Woha District is carried out three times a year. The first planting begins during the rainy season, namely March to April; the second planting starts in May until June; while the third planting is carried out to prepare seeds for the next planting season. This third planting starts from October to November.

To start the process of planting shallots, farmers in Woha District, Bima Regency, make preparations by preparing tools for the land processing process such as machetes and hoes which function to clear the land of weeds and crop residue from the previous planting season, then rent a tractor which functions to plow the land. The next activity is making beds and irrigating the land, then spraying pesticides so that weeds do not grow again after the planting and maintenance process is carried out. After the land processing process is complete, the farmer then prepares the shallot seeds by cleaning the skin and cutting off the top of the shallot, with the aim that after the seeds are planted, new shoots will quickly grow from the shallot seeds. The number of bitites needed depends on the area of land that will be planted with shallots.

The planting process is usually carried out 1 day after the land is irrigated. The planting process takes between 1 and 2 days of planting, depending on the area of land planted with shallots. After the process of planting shallot seeds is complete, the next step is the maintenance process, namely pest and disease control activities, weed control and fertilization which begins with the process of spraying pesticides, fungicides and herbicides.

The spraying process is carried out every day with the spraying time being between morning and evening depending on the weather conditions in the area. Meanwhile, the irrigation process is usually carried out once a week using water machines and pipes as tools to channel water to land that has been planted with shallots. The maintenance process is carried out until the shallots are ready to be harvested.

The shallot harvesting process begins with pulling out the shallot bulbs for one to two days, then the shallots are collected in one place/barn (people in the research area usually call it Sota). The next activity is drying the shallots for 7-8 days and then continuing with the binding process for 1-2 days. After the binding process is complete, the shallot production can be weighed and sold. The process of selling shallots in Woha District, Bima Regency, on average, shallot farmers sell them directly on location (buyers come), so as to minimize the marketing costs that must be incurred by farmers.

B. Analysis of Shallot Farming Income

Table 5. Average Income of Shallot Farmers in Woha District, Bima Regency

No.	Description	Amount
1	Land area	0.59 Ha
	Production	40.6 Kw
	Price/Kw	Rp. 1,736,765
2	Reception	Rp. 70,100,735
	Total Average Receipts	Rp. 70,100,735
	Production cost	
	A. Variable costs	
	1. Seedlings	Rp. 11,290,294
	2. Fertilizer	
	Urea, KCL, Phonska, Pelangi	Rp. 2,480,000
	3. Pesticides	
	Gracia, Brovrea, Renate, Geogre, Winner	Rp. 7,230,441
3	4. Labor	
	Land processing, planting, fertilizing, maintenance, harvest	Rp. 10,758,383
	5. Other Variable Costs (BBM)	Rp. 5,308,529
	B. Fixed Costs	
	1. Rent a Tractor	Rp. 1,475,000
	2. Depreciation Value	
	Hoe, Sprayer, Water Machine, Water Pipe, Tarpaulin, Nylon Rope, Machete, Water Drum	Rp. 705,786
	3. Land Tax	Rp. 29,449
4	Total Cost (TVC+TFC)	

Variable Costs	Rp. 37,067,647
Fixed cost	Rp. 2,199,720
Total Average Production Costs	Rp. 39,267,367
5 Revenue (TR-TC)	Rp. 30,833,368

Source: Primary data processed, 2023

C. Analysis of Factors Affecting Income

1) Land area

Table 10. Distribution of Respondents Based on Land Area in Woha District, Bima Regency

Land Area (are)	Frequency (person)	Percentage (%)
≤ 30	9	26.5
31-50	13	38.2
51-70	2	5.9
71-90	5	14.7
> 90	5	14.7
Total	34	100

Source: Primary data processed, 2023

2) Capital

Table 11. Distribution of Respondents Based on Amount of Capital Ownership for Shallot Farming in Woha District, Bima Regency

No	Description	Number of units)	Value (Rp)
1.	Hoe	2	Rp. 158,500
2.	Sprayer	2	Rp. 3,342,383
3.	Water machine	1	Rp. 4,352,205
4.	Water pipe	24	Rp. 1,717,941
5.	Tarp	6	Rp. 1,872,353
6.	Nylon Rope	1	Rp. 46,529
7.	Machete	1	Rp. 96,029
8.	Water Drum	1	Rp. 139,706
9.	Cash	-	Rp. 38,630,995
Total			Rp. 50,356,641

Source: Primary data processed, 2023

3) Labor

Table 12. Average Use of Labor in the Shallot Production Process in Woha District, Bima Regency

o	Labor Sources	Number of people)	Number of Working Days (days)
	Outside the		
	Family	18	15
	In family	6	62

Amount	24	77
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Source: Primary data processed, 2023

4) Production

Table 13. Distribution of Respondents Based on Amount of Red Onion Production in Woha District, Bima Regency

Production (Kw)	Amount	Frequency (person)	Percentage (%)
10 - 40		22	64.71
41 - 80		8	23.53
81 - 130		4	11.76
Total		34	100

Source: Primary data processed, 2023

5) Price

Table 14. Distribution of Selling Prices of Shallots in Woha District, Bima Regency

Price (Rp/Kw)	Frequency (person)	Percentage (%)
Rp. 1,600,000 - Rp. 1,650,000	1	2.94
Rp. 1,700,000 - Rp. 1,750,000	24	70.59
Rp. 1,800,000 - Rp. 1,850,000	9	26.47
Total	34	100

Source: Primary data processed, 2023

D. Analysis of the Effect of Land Area, Capital, Labor, Production and Prices on Income

1) Multiple Linear Regression Analysis

Table 15. Results of Multiple Linear Regression Analysis

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-3.98E+07	7,966,795,687		-4,997	,000
LAND AREA (X1)	179,594,347	52,226,783	,319	3,439	,002
CAPITAL X2	-1,077	,068	-1,049	-	,000
LABOR (X3)	-11369	,553	-0.029	-2,053	,050
PRODUCTION (X4)	1,484,935,773	37405.021	1,677	39,699	,000
PRICE (X5)	22,607	4,158	,044	5,438	,000

Source: Primary data processed by SPSS, 2023

The data in the table above can be written mathematically in the form of an equation as follows:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + e$$

$$Y = -3.9813957790042825 + 179594.347X_1 + (-1.077)X_2 + (-11369)X_3 + 1484935.773X_4 + 22.607X_5 + e$$

2) Hypothesis testing

a. F test

Table 16. Simultaneous Test Results (F Test)

ANOVA

Model	Sum of Squares	Df	Mean Square	F	Sig.
Residual	2,289E16	5	457851899434	7309,881	,000a
Total	1.754E13	28	626346566759		
Total	2.291E16	33			

a. Predictors: (Constant), PRICE (X5), CAPITAL X2, LABOR (X3), PRODUCTION (X4), LAND AREA (X1)

Source: Primary data processed by SPSS, 2023

b. T test

Table 17. Partial Test Results (T Test)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-3,981E7	7966795,687		-4,997	,000
LAND AREA (X1)	179594,347	52226,783	,319	3,439	,002
CAPITAL X2	-1,077	,068	-1,049	-15,927	,000
LABOR (X3)	-11369	,553	-.029	-2,053	,050
PRODUCTION (X4)	1484935,773	37405,021	1,677	39,699	,000
PRICE (X5)	22,607	4,158	,044	5,438	,000

Source: Primary data processed by SPSS, 2023

c. R Test

Table 18. Determination Coefficient Test Results

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	1,000 ^a	,999	,999	791420,60041

a. Predictors: (Constant), HARGA (X5), MODAL X2, TENAGA KERJA (X3), PRODUKSI (X4), LUAS LAHAN (X1)

Source: Primary data processed by SPSS, 2023.

CONCLUSION

Based on the results and discussion of this research, several conclusions can be drawn. Firstly, in Woha District, Bima Regency, shallot farming exhibits certain key characteristics.

The average income for shallot farmers in this area amounts to Rp. 30,833,368, while their average expenditure is Rp. 39,267,367. On the brighter side, the average receipt stands at IDR 70,100,735, and farmers typically utilize 0.59 hectares of land for cultivation.

Secondly, an analysis of the factors influencing income in shallot farming was conducted. This analysis focused on land area (X1), capital (X2), labor (X3), production (X4), and price (X5) in relation to income (Y) in Woha District, Bima Regency. The hypothesis testing results reveal the following: a. Simultaneously, all these factors—land area (X1), capital (X2), labor (X3), production (X4), and price (X5)—are significant with p-values < 0.05. Consequently, they collectively exert a significant impact on the income (Y) of shallot farming in Woha District, Bima Regency, with an impressively high coefficient of determination (R²) of 99.9%. b. On a partial level, factors such as land area (X1), capital (X2), production (X4), and price (X5) also exhibit significant effects on the income (Y) of shallot farming in Woha District, Bima Regency, with p-values < 0.05. However, the labor factor (X3) does not significantly influence income (Y), as its p-value exceeds 0.05.

In light of these findings, several suggestions can be made for various stakeholders: a. For the government: The government should prioritize efforts to maximize the empowerment of agricultural instructors, enabling them to address the challenges faced by farmers effectively. Additionally, investments in communication facilities and infrastructure are essential to expedite the dissemination of economic information. Offering subsidies for fertilizer and medicine can further help align farmers' income with their agricultural activities. b. For farmers: Shallot farmers should diversify their crops to reduce homogeneity, which can impact harvest prices and income. Implementing recommended agricultural technology practices can also enhance income prospects. c. For future researchers: Future research endeavors should aim to expand upon or compare the findings of this study. Exploring other factors that influence farmers' income under varying conditions and locations would be valuable for advancing agricultural knowledge and policy.

In conclusion, these conclusions and suggestions shed light on the intricacies of shallot farming in Woha District, Bima Regency, providing insights for both policymakers and farmers to improve income and sustainability in the agricultural sector. Additionally, they underscore the importance of continued research to address evolving challenges and opportunities in agriculture.

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