

ANALYSIS OF FACTORS AFFECTING LEEK PRODUCTION IN TORONGREJO VILLAGE ON FARMERS WHO USE AND NOT USE FARMER CARDS

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ABSTRACT

Leek production from year to year is increasing due to the large number of farmers who switch farming businesses from shallots to leeks because leeks are more profitable than shallots (Sholihah et al., 2018) Torongrejo is one of the villages that has implemented a farmer card, but it is still not comprehensive for all farmers. This study aims to determine the factors that affect leek production and to find out the difference in the income of farmers who use farmer cards and not farm card users. The research method uses quantitative and qualitative approaches. This research was conducted in April – June 2022, located in Torongrejo Village, Junrejo District, Batu City. After sampling using simple random sampling, the number of samples was determined purposively (intentionally) as many as 44 samples consisting of 20 farmers who used farmer cards, 24 farmers who were not card user's peasants. The results of the analysis showed a test value of f of 82.17 with a p -value of 0.000 so that simultaneously all variables affect leek production. While the t -test, partially the variables that affect leek production are seedlings, urea, za, manure. Labor variables and drugs have no effect on leek production. Based on an Independent Simple T-test found a p -value of 0.010 which explains there is a difference in income between the farmer's user and non-farm card user.

Keywords:

Leek production; Farm cards

INTRODUCTION

Leek is a horticultural crop cultivated in Indonesia. Batu City the production of leeks from year to year is increasing. It can be seen from BPS data on leek production in Batu City in 2018 52,984 Kw, in 2019 it reached 63,126 Kw. Torongrejo is one of the villages that is a leek production area in Batu City. The large amount of leek production is caused by the transition of leek farming to leek farming. This is due to the factor of leek production, one of which is by the income of leeks, which shows a higher amount than leek income.

The farmer card is one of the efforts to improve the economic welfare of farmers, through access to integrated banking services that function as deposits, transactions, lending to subsidy cards (e-wallets). Batu City is an area that has implemented farmer cards, one of which is in Torongrejo Village. It is certain that farmers who have a farmer card get a lot of benefits but there are still many farmers who do not have a farmer card for various reasons.

Based on the above problems, the objectives of this study include: to determine the difference in the income of farmers who use farmer cards and not farm card users and factors that affect leek production.

METHOD

This research was conducted in Torongrejo Village, Junrejo District, Batu City in April–Juni 2022. The sampling process used simple random sampling and the determination of the number of samples purposively or intentionally as many as 44 samples as many as 20 farmer respondents who used farmer cards and 24 respondents were not farmer card users. The data used is primary data and secondary data. Data analyses used include: Independent simple t-test and multiple linear regression with Cobb-douglass approach.

Analysis The t-test aims to determine individual free variables against bound variables. (Ghozali, 2007).

Statistical hypothesis:

$$H_0: m_1 - m_2 = 0$$

$$H_1: m_1 - m_2 \neq 0$$

Information:

μ_1 : average income of farmers using farm cards.

μ_2 : The average income of farmers is not a farmer card user.

Test criteria:

1. If the significance value is <0.05 , it accepts H_0 and rejects H_1 , which means that there is a difference in income between farmers who use farm cards and farmers who are not users of farm cards.
2. If the significance value is >0.05 then it accepts H_1 and rejects H_0 , meaning that there is no difference in income between farmers who use farm cards and farmers who are not users of farm cards.

For factors affecting the production of leeks with the following equation model:

$$Y = b_0 + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 + b_6 X_6 + b_7 d$$

Information:

Y = Leek Production (kg)

b_0 = Constant

b = regression coefficient

X_1 = Seedling (kg/ha)

X_2 = Labour (HOK/Ha)

X_3 = urea (kg/ha)

x_4 = ZA (kg/ha)

X_5 = Manure (sack/ha)

X_6 = Medicines (Kg/Ha)

D = Farm card (1 = farm card user, 0 = non-farm card user now)

RESULT AND DISCUSSION

Differences in Income of Farmers Users and Non-Users of Farm Cards

The difference in the income of farmers who use farmer cards and farmers who are not users of farmer cards is also tested using a t test or independent sample test. This test uses the minitab application and the test results are obtained as follows:

Table 1. Two - sample t Farm Card Users and Non-Farm Card Users

	N	Mean	StDev	SE Mean
farm card users	20	82846611	10978411	2454847
Not a farm card user	24	69818587	20252761	4134078
Difference = mu (farmer card user) - mu (not farm card user)				
Estimate for difference: 13028024				
95% CI for difference: (3276946; 22779102)				
T-Test of difference = 0 (vs not =): t-Value = 2,71 P-Value = 0,010 DF = 36				

Source: personal documents, processed.

Based on table 1, the results of the t test using the Minitab application can be seen that the P-Value value is 0.010, which means that the value is more <0.05. So, it can be interpreted that the value can be said to be significant. From the test, it can be concluded that receiving H1 means that there is a difference in income between farmers who use farmer cards and farmers who are not farmers who use farmer cards. The difference can be seen from the average income of farmers who use farmer cards of Rp. 82,846,611 / Ha while farmers who are not users of farmer cards have an average income of Rp. 69,818,587 / Ha.

Factors affecting the production of leek farming

The production factors used for this study include: seeds (X1), labor (X2), Urea (X3), ZA (X4), Manure (X5) medicines (X6). In analyzing the factors affecting leek production, researchers used a model from the Cobb-Douglas production function. Based on primary data that has been obtained from interviews and observations then tabulated and processed using a minitab, the results of the regression analysis of factors affecting production in Torongrejo Village obtained the following equation:

$$Y = b_0 + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 + b_6 X_6 + b_7 D$$

$$Y = 2.21 + 0.456X_1 - 0.0089X_2 + 0.224 X_3 + 0.0817 X_4 - 0.152 X_5 - 0.0132 X_6 + 0.0376 D$$

Description:

- Y : leek production
- X₁ : seedlings (Kg/Ha)
- X₂ : workforce (HOK/Ha)
- X₃ : Urea (kg/ha)
- X₄ : Per (kg/ha)
- X₅ : Manure (Sack/Ha)
- X₆ : medicines (Kg/Ha)
- D : dummy

Table 2. Regression Results of Factors Affecting Bawan Daun Production in Torongrejo Village

Predictor	Coef	SE Coef	T	P	BRIGHT
Constant	2,2063	0,1745	12,64	0,000	
l bit/ha	0,45550	0,06389	7,13	0,000	5,100
l tk/ha	-0,00894	0,03213	-0,28	0,782	7,169
l urea/ha	0,22351	0,05391	4,15	0,000	8,956
l per ha	0,08172	0,04719	1,73	0,092	9,229
l kndang/ha	-0,15165	0,03723	-4,07	0,000	5,814
l drug/ha	-0,01321	0,01623	-0,81	0,421	1,906
dummy	0,037558	0,009309	4,03	0,000	2,076

Source: personal data, processed

Based on the equation above, a constant value of 2.21 is obtained where it can be known that leek production can be worth 2.21 if other factors are equal to zero. In addition to the consta, there is also a coefficient value in each variable where the value can determine

if there is a change in the value of the variable. The results of the model feasibility test (significance) of factors affecting leek production are as follows:

a. Concurrent Test (Test F)

F test analysis aims to determine the influence of individual free variables on bound variables (Ghozali, 2007). With criterion f calculate the f off table or significance value $f < 0.05$ at a 95% confidence level then accept H_1 and reject H_0 . The hypotheses used are as follows:

H_0 : independent variables have no significant effect on dependent variables.

H_1 : independent variables have a significant influence on dependent variables.

Table 3. Minitab F Test Results

Source	DF	SS	MS	F	P
Regression	7	0,261864	0,037409	82,17	0,000
Residual Error	36	0,016390	0,000455		
Total	43	0,278253			

S : 0,0213371

R-Sq : 94,1%

R-Sq(adj) : 93,0%

Source: personal documents, processed

Based on table 3 it can be known that the calculated value of f is 82.17. The value of f of the table is 2.31, so it can be known that the value of f count is greater than that of f of the table ($82.17 > 2.31$). Similarly, with a significance value of 0.000 smaller than 0.05, in this test it can be concluded that simultaneously free variables include seeds, labor, urea, za, manure, and medicines that have a real impact on leek production in Torongrejo Village.

b. Coefficient of Determination (R^2)

The coefficient of determination test (R^2) serves to see the magnitude of independent variables (seedlings, labor, urea, za, manure, medicines) explaining the dependent variable (leek production).

Based on the results of the analysis in table 2, data on the value of R^2 was obtained by 94.1%, which means the value of changes in the variable production of leeks. This value means that 94.1% of the change in the leek production variable in Torongrejo Village can be explained by all the free variables in the model. The remaining 5.9% is explained by other factors outside the study.

c. Individual Test (T-Test)

The T test is useful for determining the effect of free variables that have been studied individually on leek production in Torongrejo Village. Factors affecting the production of leeks are seedlings, labor, urea, za, manure, medicines. so that the statistical test t is used using the comparison of t table with t count with asumsi H_0 is accepted if the significance value of the t test > 0.05 and H_1 is accepted if the significance value of the t test is < 0.05 , based on the acceptance and repulsion criteria of the hypothesis with a 95% confidence rate is as follows:

H_0 : there is no influence of independent variables (seeds, labor, urea, za, manure, and medicines) on the dependent variables (leek production).

H_1 : there is an influence of independent variables (seeds, labor, urea, za, manure, and medicines) on the dependent variables.

Based on the comparison of significance values, it can be concluded that the value of the t test is as follows:

1. The seed variable (X1) has a significance value of 0.000, the value is smaller than 0.05 so it can be said by rejecting H0 and accepting H1. This can explain that seedlings have a real influence on leek production in Torongrejo Village with a 95% confidence level. The seed regression coefficient (X1) is 0.456. The figure is positive so that it can show an influence that is in the same direction or directly proportional to the seedlings and leek production. So, it can be said that if there is an addition of seedlings by 1%, the amount of leek production has increased by 0.456%. This is in line with research (Hoar & Fallo, 2017) that seeds become a factor of production, even assumed if other variables are considered fixed when there is an increase in the number of seeds the amount of production is increasing.
2. The labor variable (X2) has a significance value of 0.782, the value is greater than 0.05 so it can be said by rejecting H1 and accepting H0. This can explain that labor does not have a real influence on leek production in Torongrejo Village with a 95% confidence level. Labor regression coefficient (X2) of -0.0089 The figure is negative. This influence can be said that if there is an increase in labor use of 1%, the amount of leek production decreases by 0.0089%. Labor regression coefficient (X2) of -0.0089 The figure is negative. This influence can be said that if there is an increase in labor use of 1%, the amount of leek production decreases by 0.0089%. This result means that the more labor used, the lower the work productivity of a person, meaning that the labor used is more than the amount of work, resulting in ineffectiveness in production. (Salim et al., n.d.) .
3. The urea variable (X3) has a significance value of 0.000. The value is smaller than 0.05 so it can be said to reject H0 and accept H1. this can explain that urea has a noticeable influence on leek production with a confidence level of 95%. The urea regression coefficient (X3) is 0.224. This figure is positive so that it can show an influence in the same direction or directly proportional to the use of urea and leek production. This effect can be said that if there is an increase in the amount of urea by 1%, the amount of leek production has increased by 0.224%. These results are in line with research (Onibala et al., 2017) the use of urea can increase the amount of production by 0.2144%.
4. The variable za (X4) has a significant value of 0.092. The value is greater than 0.05. So, it can be said that it has no influence on leek production by accepting H0 and rejecting H1 when using a 95% confidence level, but it can be stated to influence leek production if it uses a 90% confidence level. This is because the value of 0.092 is less than 0.10 so it can accept H1 and reject H0. The regression coefficient za (X4) is 0.0817. The figure is positive so that it can show an influence in the same direction or directly proportional to the use of za and the production of leeks. It can be said that if there is an addition of za as much as 1%, the amount of leek production has increased by 0.0817%. This result is in line with research (Ma'arif & Widyawati, 2022) that Za fertilizer is a factor that affects production every time there is an additional use of za fertilizer feeding will increase the amount of production.
5. The variable manure (X5) has a significant value of 0.000. The value is less than 0.05. So, it can be said to accept H1 against H0. Then it can be explained that manure has a noticeable influence on the production of leeks with a confidence level of 95%. The manure regression coefficient (X5) is -0.152. The number is negative. This influence can be said that if there is an increase in manure use by 1%, then leek production decreases by 0.152%. These results are in line with research (Sinabang et al., 2021) that the use of manure is not a factor that affects production. Excessive use of manure will reduce the amount of production so that it can be said to be inefficient.
6. The drug variable (X6) has a significance value of 0.421. The figure is greater than 0.05. So, it can be known that the variable rejects H1 and accepts H0. That way medicines do

not have a noticeable effect on leek production with a 95% confidence level. The regression coefficient of drugs (X6) is -0.0132. The number is worth a lot of money. So, it can be said that if there is an addition of medicines as much as 1%, the production of leeks decreases by 0.0132%. The results of this study are in line with research conducted by other researchers, namely that drugs have no effect because pests that attack plants are immune or resistant to toxins (Mustafa, 2022), so it can be concluded that farmers often use the same drugs to deal with pests on plants, if pests have adapted, farmers will increase the amount of use of these drugs.

7. The dummy variable has a significance value of 0.000. The figure is greater than 0.05. So, it can be known that the use of farm cards has a noticeable influence on the production of leeks. The dummy regression coefficient (D) is 0.0376. This figure is positive so that it can show an influence in the same direction or directly proportional to the use of dummy and the production of leeks. The effect can be said that farmers who use farm cards can produce 0.0376% more leeks than farmers who are not farmers who use farm cards.

CONCLUSION

Based on multiple regression analysis applied using minitabs, in the f test, a value of 82.17 was obtained with a p-value of 0.000 so that simultaneously or together all variables affect leek production. Meanwhile, based on the t test, partially the variables that affect leek production are seedlings, urea, za, manure. Meanwhile, labor variables and medicines partially have no effect on leek production. From the confidence value, farmers can optimize income through the addition of variable inputs for seeds, urea, Za,

Based on the difference in income earned by farmers who do not have a farmer card, they can take advantage of the farmer card program as a support for subsidized fertilizer.

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