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Analysis of Tomato Production and Marketing Efficiency for Farmers in Boalemo Regency

Sri Ferlin Hakim[1], Ria Indriani[2], Asda Rauf[3]
[1]Mahasiswa Program Studi Agribisnis Pasca Sarjana UNG
[2,3]Dosen Program Studi Agribisnis Pasca Sarjana UNG

***Author Correspondence:** srifelinhakim@gmail.com

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ABSTRACT

Tomatoes (Solanum lycopersicum L.) are one of the horticultural commodities that have high economic value and an important role in fulfilling community nutrition. The high demand for tomatoes, both for fresh consumption and as raw materials for the processing industry, makes this commodity have great potential for development. In Indonesia, tomato production is spread across various highland and lowland areas, one of which is in Paguyaman District, Boalemo Regency.
This study aims to analyze the efficiency of tomato production and marketing in farmers in Boalemo Regency. The study uses a quantitative approach with Cobb-Douglas production function analysis, Stochastic Frontier Analysis (SFA), as well as marketing channel analysis, marketing margin, and farmer's share.
The results of the study show that land area, seeds, fertilizers, labor, and pesticides affect tomato production. Most farmers have achieved a fairly good level of technical efficiency, but there are still opportunities to increase productivity. The dominant marketing channels are farmers-traders, collectors–consumers. The longer the marketing channel, the greater the marketing margin formed.

INTRODUCTION

Horticulture which has high economic value and an important role in fulfilling community nutrition. The high demand for tomatoes, both for fresh consumption and as raw materials for the processing industry, makes this commodity have great potential to be developed. In Indonesia, tomato production is spread across various highland and lowland areas, one of which is in Paguyaman District, Boalemo Regency.
However, tomato farmers often face various obstacles that hinder income increases, such as price fluctuations at the farmer level, high production costs, and dependence on middlemen in the marketing process. This condition causes farmers' income to be unstable and farming business efficiency is not optimal. On the other hand, the long market structure also causes the farmer's share to be relatively small.
Gorontalo Province is an area that produces tomatoes. Tomato production in Gorontalo has great potential in the horticultural agriculture sector and can affect inflation in the region. The increase in tomato production shows that there is great potential in the horticultural agriculture sector in Gorontalo.
Influence on the Economy, namely the contribution of inflation: The price of tomatoes is one of the factors that can trigger inflation in Gorontalo. For example, in February 2025, the increase in tomato prices will be the biggest contributor to inflation. Price stabilization efforts: The provincial government once held a cheap market to stabilize the price of tomatoes and chilies, by limiting purchases per person to ensure that the wider community can
Tomato marketing to find out the extent to which farmers have optimized the use of inputs and obtained efficient results, as well as how the marketing chain can be improved to make it more profitable for farmers.

RESEARCH METHODS

Research Using Method survey with a quantitative approach. The data used consists of primary data and secondary data. Data First obtained Through direct interviews using questionnaires to tomato farmers. Secondary data were obtained from government agencies, statistical reports, scientific journals, and relevant literature. Variables

Research Includes Wide land, seeds, fertilizers, labor, and pesticides as Factors production.
Analysis Production Function done Using Cobb-Douglas model to determine the influence of each factor of production on production output tomatoes. Level Efficiency technical analysis using Stochastic Frontier Analysi (SFA).
Marketing analysis is carried out by identifying the marketing channels used by farmers, calculating marketing margins, farmer's share, and marketing efficiency. Data are analyzed descriptively and quantitatively to obtain a comprehensive picture of tomato production and marketing conditions.

RESEARCH RESULTS

Respondent Characteristics

The characteristics of the respondents are a general description of the socio-economic conditions of the farmers who are the research sample. The characteristics analyzed include age, education level, farming experience, land area, and number of family dependents.

Respondent Age

Age is one of the factors that can affect farmers' ability to manage farming. Based on the results of the study, most tomato farmers are in the productive age group, which is between 30-55 years.
This condition shows that the majority of farmers still have good physical abilities in carrying out agricultural activities. Farmers who are of productive age tend to have higher morale and are more receptive to innovations and new technologies than older farmers.
On the other hand, older farmers generally have more experience in tomato cultivation so that they are able to anticipate various problems that arise during the production process. Therefore, the combination of productive age and farming experience is an important capital in improving farming efficiency

Farming Experience

Farming experience is one of the indicators that shows the level of skill of farmers in managing their farming business.
Most of the respondents have more than 10 years of farming experience. A long enough experience allows farmers to have better knowledge about planting patterns, fertilizer use, pest and disease control, and crop marketing strategies.
Farmers who have long experience are generally better able to make the right decisions in dealing with various risks of farming so that they have the potential to achieve a higher level of efficiency.

Business Land Area

Land area is the main production factor in tomato farming. The results of the study show that most farmers cultivate land on a small to medium scale.
The difference in land area causes differences in production capacity between farmers. Farmers who have more land tend to be able to produce higher production than farmers who have narrow land.
However, a large land area does not always guarantee a high level of efficiency if it is not balanced with good management.

Analysis of Tomato Production Efficiency

Production efficiency describes the ability of farmers to produce maximum output with the use of available inputs. In this study, production efficiency was analyzed using the Cobb-Douglas production function approach through the Stochastic Frontier Analysis (SFA) method.
Variables used in the analysis include:
Land Area (X1) Seeds (X2) Fertilizer (X3)
Labor (X4) Pesticides (X5)
Meanwhile, the output variable is the amount of tomato production produced by farmers.

Production Efficiency

The results of the analysis showed that the land area has a positive influence on tomato production. The more land used, the greater the chance of increasing production.
The use of quality seeds has been proven to be able to increase crop yields. Superior seeds produce better plant growth than ordinary seeds.
Fertilizers have a significant influence on tomato production because they function to provide nutrients needed by plants. However, excessive use of fertilizers can increase production costs.
Labor has an important role in supporting all cultivation activities from land cultivation to harvesting.
Pesticides play a role in controlling pests and plant diseases so that they can maintain the quality and quantity of crops.

DISCUSSION

The Influence of Land Area on Tomato Production

Land area is one of the main production factors in tomato farming. The more land the farmer has, the greater the production capacity that can be produced. The results of the study show that land area has a positive effect on tomato production. This finding is in accordance with the production theory which states that increasing the use of certain production factors will increase output if other production factors are available in sufficient quantities.

Farmers who have more land have the opportunity to increase the number of crops cultivated so that the production produced is higher. In addition, a larger scale of business allows farmers to obtain better economic benefits. Influence of Seeds on Tomato Production Seeds constitute Factors Production very Determine SuccessTomato cultivation. Usage Seeds Superior table to increase plant growth capacity, resistance to diseases, and Productivity yield. The results of the study show that the use of Seeds quality make a positive contribution to increased production tomatoes.

Good seeds will produce healthy plants and have a higher adaptability to environmental conditions. Therefore, the use of superior seeds needs to be encouraged through extension programs and assistance for production facilities

Effect of Fertilizer on tomato production

Fertilizer functions to provide nutrients that plants need for growth and development. Research results show that Usage fertilizer has a significant effect on tomato production. Proper fertilization can increase soil fertility and support plant growth by optimal. However Thus, the use of fertilizer The excessive can lead to wasted production costs and Reducing the efficiency of farming

The Influence of Labor on Tomato Production

Fertilizer functions to provide nutrients needed by plants for growth and development. The results of the study show that the use of fertilizer has a significant effect on tomato production.

Proper fertilization can increase soil fertility and support optimal plant growth. However, excessive use of fertilizers can lead to wasted production costs and reduce farming efficiency.

Effect of Pesticides on tomato production

Pesticides are used to control pest attacks and plant diseases. The results of the study show that the use of pesticides has an effect on increasing tomato production because it is able to reduce crop loss. However, the use of pesticides must be carried out according to the recommended dosage so as not to have a negative impact on the environment and the health of farmers.

Technical Efficiency of Tomato Farmers

The level of technical efficiency obtained shows that most farmers have been able to manage the production factors quite well. However, there is still an opportunity to increase production without having to significantly increase the number of inputs.

The difference in efficiency levels between farmers is influenced by farming experience, education, managerial skills, and access to agricultural information and technology.

Tomato Marketing Channels

Results Research show There are several tomato marketing channels, namely:

Saluran I

Farmers → Consumers

Saluran II

Farmers → Traders, Collectors → Consumers

Saluran III

Farmers → Collectors → Retailers, → Consumers

The second channel is the most widely used channel because it makes it easier for farmers to sell their crops.

Marketing Margins

Marketing margin is the difference between the price paid by consumers and the price received by farmers. The longer the marketing channel, the greater the margin formed.

Large margins occur due to the costs of transportation, storage, sorting, and profits taken by each marketing agency

Farmer's Share

Farmer's share shows the percentage of price that farmers receive compared to the price paid by consumers. Direct marketing channels from farmers to consumers provide a higher farmer's share than other marketing channels.

This shows that the shorter the marketing chain, the greater the share of the price received by farmers.

Marketing Efficiency

Marketing channels that have low margins and high farmer's share are the most efficient channels. Therefore, the development of direct marketing and strengthening of farmer institutions need to be encouraged to improve the welfare of tomato farmers.

CONCLUSION

Land area, seeds, fertilizers, labor, and pesticides are production factors that affect tomato production levels.

The use of the right production factors and according to the needs of plants can increase production and support the success of tomato farming businesses.

The land area has important role in Improve Production tomatoes. The larger the land cultivated, the more large Opportunities farmer to improve quantity Production produced, with a note of the use of factors other productions are carried out optimally.

The use of superior seeds contributes to increasing the productivity of tomato plants. Quality seeds are able to produce better plant growth, increase resistance to pest and disease attacks, and produce higher quality fruit.

Fertilizer is one of the factors that have a significant effect on tomato production.

Proper fertilization can increase soil fertility and support plant growth, while excessive use of fertilizers can increase production costs and decrease farming efficiency.

Energy Work have Role Important in the whole tomato cultivation process, Starting from land cultivation, planting, maintenance, to harvesting. Management An effective and efficient workforce can increase productivity and reduce unnecessary production costs.

Pesticides Role in Maintain the productivity of tomato plants through control hammer and disease. Proper use of pesticides can reduce the risk of crop loss and care Quality Products The produced.

The level of technical efficiency of tomato farmers in Boalemo Regency is quite good.

This shows that most farmers have been able to utilize production factors relatively efficiently. However, there is still an opportunity to increase production through improving farm management without having to significantly increase the number of inputs.

ADVICE

Educational institutions are expected to increase research, counseling, and community service activities related to cultivation and marketing tomatoes to support the improvement of farmers' knowledge and skills.

The community is expected to support and utilize local agricultural products, especially tomatoes, so that it can help increase farmers' income and welfare.

Researchers are further advised to develop research with a wider area coverage and add other variables that can affect the efficiency of tomato production and marketing.

Tomato farmers are expected to increase the efficiency of the use of production factors, strengthen cooperation through farmer groups, and utilize more effective marketing channels to increase farm income.

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