

Efficiency of Soybean Farming Production Factors (*Glycine max* (L.) Merrill) in Bancak Hamlet, Gebyog Village, Mojogedang District, Karanganyar Regency

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Abstract

This thesis was based on the result of research aimed at assessing the cost, revenues, and income of Soybean farming; to study the effect on the use of production factors on the production of soybean farming; and to assess economic efficiency level of inputs combination used on soybean farming in Bancak village, sub district Mojogedang, Karanganyar Regency. Basic method of the research descriptive analysis method and its execution is by survey technique. The research took one village who have the biggest soybean productivity in sub district Mojogedang. There are 30 respondents and taken by simple random sampling method. The result of this research showed that with the farming costs of soybean is Rp11,200,155.94/Ha/MT, the farming revenue of soybean farming is Rp14,242,574.26/Ha/MT, and that produce income amount of Rp3,042,418.32/Ha/MT. To study the effect of the use of production factors about production is used regression model with the Cobb Douglas produce function model modification. That equation was analyzed by double linear regression showed that the used of those production factors are affected to soybean production. Individually production factors the land area and the seeds also having real effect the soybean production, labour, Urea fertilizers, Phonska fertilizers, Gandasil B fertilizers, Gandasil D fertilizers, insecticides Apidor, level of graduated education, and experience of soybean farming are not real effect to soybean production. Pursuant to maximum advantage approach can be known that using inputs of soybean farming in has not efficient.

Keywords: soybean farming, production factor, economic efficiency

INTRODUCTION

Soybeans are one of the strategic food commodities in Indonesia because they are the main raw material for various food products such as tempeh, tofu, soy sauce, and various other processed foods. The national demand for soybeans continues to increase in line with population growth and increasing public consumption of soy-based products. However, domestic soybean production is still not able to meet national needs, so Indonesia still has to import soybeans from abroad. Therefore, increasing domestic

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soybean production is one of the important efforts to reduce import dependence and strengthen national food security.

Increasing soybean production can be done through more optimal farming management, especially in the use of production factors. Production factors in soybean farming include land area, labor, seeds, fertilizers, and pesticides used in the cultivation process. The use of appropriate and efficient production factors will affect the level of production produced by farmers. On the other hand, inappropriate use can cause production to be suboptimal and reduce the level of profits obtained by farmers.

Karanganyar Regency is one of the areas in Central Java Province that has the potential for the development of soybean crops. One of the areas that carry out soybean farming activities is Gebyog Village, Mojogedang District. Some farmers in the region make soybeans as one of the commodities they are cultivating. However, in practice, farmers still face various problems, such as the use of production factors that are not optimal, production costs that are quite high, and fluctuations in the selling price of crops that affect the income level of farmers.

Based on these conditions, a study is needed on the influence of production factors on soybean production as well as an analysis of the level of profit and efficiency of the use of production factors in soybean farming. Through this study, it is hoped that the production factors that affect soybean production and the level of efficiency of its use can be known, so that it can be considered in decision-making for farmers and related parties in an effort to increase the productivity and income of soybean farming.

The purpose of this study is to analyze the influence of production factors including land area, labor, seeds, fertilizers, and pesticides on soybean production, determine the profit level of soybean farming, and analyze the level of efficiency of the use of production factors in soybean farming in Gebyog Village, Mojogedang District, Karanganyar Regency.

METHOD

This study uses a survey method with an analytical descriptive approach to describe and analyze the factors that affect soybean production. The research was carried out in Mojogedang District, Karanganyar Regency, which was chosen purposively because it is one of the soybean-producing areas. The research sample was soybean farmers in Bancak Hamlet, Gebyog Village, as many as 30 respondents who were selected using a simple random sampling method from a total population of 50 farmers. Data collection was carried out through observation, interviews using questionnaires, and recording data from related agencies. Data analysis included an analysis of production functions using the Cobb-Douglas model which was estimated using the Ordinary Least Square (OLS) method using SPSS software to determine the influence of production factors on soybean yields. In addition, an analysis of production costs, revenues, and profits of farming was carried out, as well as an analysis of the economic efficiency of the use of production factors by comparing the Marginal Product Value (NPM) and the Marginal Cost of Sacrifice (BKM).

RESULT AND DISCUSSION

The characteristics of the respondent farmers show that the average age of soybean farmers in Gebyog Village, Mojogedang District, Karanganyar Regency is 54 years old and is still at the productive age. The level of education of farmers is mostly elementary school, but the experience of soybean farming is quite high, reaching an average of 31 years. This shows that although the level of formal education is relatively low, the experience of farmers can support the ability to manage soybean farming. The average number of farmer family members is four people with two family members who are involved in farming activities. The average cultivated land area is 0.17 ha, which shows that the scale of soybean farming in the research area is still relatively narrow.

The use of production factors in soybean farming includes labor, seeds, fertilizers, and pesticides. The average labor use is 176.78 HOK/ha which comes from domestic and non-family workers. The greatest need for labor occurs in planting and harvesting activities because both activities require relatively large labor. Meanwhile, the use of production facilities includes seeds of 52.48 kg/ha, Urea fertilizer of 71.49 kg/ha, ZA fertilizer of 73.47 kg/ha, Phonska fertilizer of 71.88 kg/ha, and Apidor insecticide of 306.93 ml/ha. The use of various production facilities aims to increase the growth and productivity of soybean plants.

Production costs in soybean farming consist of labor costs, production facility costs, and miscellaneous costs. The total production costs incurred by farmers are on average IDR 11,200,155.94/ha per planting season. The largest cost component comes from labor costs which reach IDR 8,959,603.96/ha. The high cost of labor shows that soybean farming is still highly dependent on manual labor in the cultivation process. This condition is common in small-scale farming at the farmer level.

The average soybean production produced by farmers is 1,899.01 kg/ha with a selling price of IDR 7,500/kg so that a revenue of IDR 14,242,574.26/ha is obtained per planting season. With a total production cost of IDR 11,200,155.94/ha, a net income of IDR 3,042,418.32/ha per planting season is obtained. These results show that soybean farming still provides benefits for farmers, although the level of profit obtained is relatively not too large compared to the costs incurred.

The results of the analysis of production functions using the Cobb-Douglas model show that simultaneously production factors that include land area, labor, seeds, fertilizers, and insecticides have a real effect on soybean production. An Adjusted R² value of 0.826 indicates that 82.6% of soybean production variations can be explained by the variables used in the model, while the rest is influenced by other factors outside the study such as soil conditions, climate, and cultivation techniques. The return to scale value of 1.856 shows that soybean farming is in **a condition of increasing return to scale**, which means that the increase in the use of production factors still has the potential to increase soybean production even more. This shows that more optimal management of

production factors can still increase the productivity of soybean farming in the research area.

CONCLUSION

Based on the results of research on soybean farming in Gebyog Village, Mojogedang District, Karanganyar Regency, it can be concluded that production factors that include land area, labor, seeds, Urea fertilizer, ZA fertilizer, Gandasil B fertilizer, Gandasil D fertilizer, Phonska fertilizer, and Apidor insecticide simultaneously have a very real effect on soybean production. Partially, the factors of land area, labor, Urea fertilizer, Phonska fertilizer, and Apidor insecticide had a real effect on production, while seeds, ZA fertilizers, Gandasil B fertilizers, and Gandasil D fertilizers had no real effect. The average soybean farming revenue is IDR 14,242,574.26/ha/planting season with production costs of IDR 11,200,155.94/ha/planting season so that an income of IDR 3,042,418.32/ha/planting season is obtained. However, the use of production factors in soybean farming has not reached an optimal level of economic efficiency.

Based on these results, it is recommended that farmers improve the efficiency of the use of production factors by increasing the use of land area, labor, Phonska fertilizer, and Apidor insecticide as well as reducing the use of seeds, Urea fertilizer, ZA fertilizer, Gandasil B fertilizer, and Gandasil D fertilizer. Improving the selling price of soybeans at the farmer level is also needed to increase farmers' interest and motivation in developing soybean farming.

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