

# Analysis of Farmer Response Level in Application of Liquid Organic Fertilizer (POC) in Soybean Plants (*Glycine max*)

Siwitri Munambar<sup>1</sup>, Nofita<sup>2</sup>, Anang Sucahyo<sup>2</sup>

<sup>1</sup> Agricultural Development Polytechnic of Yogyakarta-Magelang, <sup>2</sup> Agricultural and Food Office of Kulonprogo Regency

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## Abstract

The response is a response or reply to a stimulus that can be known by actions or behaviour given to a given stimulus. By knowing the level of response of farmers to the application of liquid organic fertilizer, we can find out the extent of the response given by farmers. This study aims to find out farmers about the application of the use of liquid organic fertilizer (POC) in soybean cultivation in Yogyakarta, especially in the Cipta Boga II farmer group, Kulonprogo district.

The method used in this study is the Multiple Regression Analysis. The data used in this study are primary data, with the number of respondents 60 farmers receiving soybean seed and POC fertilizers, which were taken by purposive sampling technique.

Based on the results of the measurement of Regression Analysis, it can be concluded that the variable level of farmer response to the application of liquid organic fertilizer (POC) is affected by the cultivated yield area of 21%. Based on the response given by farmers, marketing organic fertilizer will be more effective if it is aimed at farmers who have a land area of more than 2,100 m<sup>2</sup>.

Key Word: Soybean, Response, POC

## I. INTRODUCTION

Soybean plants are food plants that have a very high protein content. Although the average yield of soybeans is lower than corn, soybeans have a higher protein content than both (Sumarno and Harnoto, 1983).

Efforts to increase soybean production in Indonesia have been carried out in various ways. Both by expanding the planting area and by intensifying it. Research on this soybean crop, both on its genetic aspects and on land that allows soybeans to continue. Efforts to increase soybean production cannot be separated from fertilizer use. With fertilization, plants will receive enough nutrients they need to develop properly. Many farmers choose to use chemical fertilizers in the hope of providing more nutrients needed by

plants than providing organic fertilizer. Organic fertilizers contain less nutrients than chemical or inorganic fertilizers, but excessive use of inorganic fertilizers will reduce soil fertility and damage it. Therefore awareness is needed for farmers to participate in using organic fertilizer so that soil fertility is maintained.

The definition of liquid organic fertilizer is fertilizer made from organic materials and materials that have been through the composting process. Basically, liquid fertilizer has a nutrient content that is very good for fertility and plant growth. Many farmers are reluctant to use liquid organic fertilizers because they are considered to be less effective in nourishing plants, whereas organic fertilizers contain various types of nutrients that are far more complete than those in chemical fertilizers. Even though it contains various elements which are smaller than the levels contained in chemical fertilizers, the natural content of liquid organic fertilizer is in accordance with the characteristics of the soil so that the soil and plants can absorb nutrients more easily. The advantages of other liquid organic fertilizers that contain various minerals, as well as essential substances needed by soil and plants, as well as plant growth hormones.

Based on this, a study was conducted on the level of farmer responsiveness to the application of liquid organic fertilizer (POC) to soybean crop cultivation. As the control variables in this study were age, arable land area and education (Siswadi and Syakir, 2016). This research is expected to be able to capture the level of response of farmers to the application of technology. In the future, besides being able to be used to analyze the level of marketing for POC producers, it can also be used to design the appropriate method of extinction in the use of POC for farmers.

## I. MATERIALS AND METHODS

The study was conducted in September - November 2018. The location of the study was carried out in the Galur District, Kulon Progo Regency. The object of the research is the Cipta Boga II Farmer Group in Kranggan Village, Galur District, Kulon Progo Regency. This group was chosen because it was in a farmer group that received Seed and POC Assistance for Fiscal Year 2018 for soybean commodities in Galur District.

This study used a questionnaire in data collection. Research variables include the level of farmer's response to the POC application. The level of response includes knowledge, attitudes and skills and is measured using a Likert scale. In addition, the control variables used in the study include age, arable land area and education (Siswadi and Syakir, 2016). Age is categorized under 20 years, 21-30 years, 31-40 years, 41-50 years and above 51 years. The area of arable land is categorized under 1400 m<sup>2</sup>, 1400 - 2100 m<sup>2</sup> and above 2100 m<sup>2</sup>. Education is classified into elementary school, junior high school, senior high school and higher education/ university (S1 / S2 / S3). Data analysis was performed using multiple regression analysis with the following models:

$$Y = \alpha + \beta_1X_1 + \beta_2X_2 + \beta_3X_3$$

Where : Y = respons

- X1 = Age (years)
- X2 = field area (m<sup>2</sup>)
- X3 = education level

## II. RESULTS AND DISCUSSION

### Respondents' Overview

Based on the results of identification in the field, obtained by respondents in this study were farmers who received seed and POC assistance from various groups, age levels, education levels and arable land area. The results of the identification are shown in the following table:

Table 1. Identity of Respondents by Age

Age (year)	Percentage
< 20	30,00
20-30	43,30
30-40	16,70
40-50	6,70
>50	3,30
Amount	100,00

Source: data processed, 2018

Seed and POC beneficiary farmers are dominated by the age group of 20-30 years, as much as 43.30%. This age group is still categorized as a young farmer. With the many young generations who work as farmers, they are expected to be able to receive a positive response to the development of technology, in this case the application of technology to use liquid organic fertilizer (POC) in soybean cultivation.

Table 2. Identity of Respondents by Field Area

Field Area (m <sup>2</sup> )	Percentage
< 1400	33,300
1400 - 2100	60,000
> 2100	6,700
Amount	100,000

Source: data processed, 2018

Sixty percent of farmers receiving POC assistance and soybean seeds have arable land between 1400 and 2100 square meters. The arable land area of farmers in the Yogyakarta area is very little on average (less than 1 ha), as well as farmers in the Cipta Boga II Farmer Group, the arable land area ranges from 1400 to 2100 square meters. With a limited area of arable land, it is expected that farmers will be able to use their agricultural land optimally, so that it will provide maximum results. One way that is used is to use modern technology in farming, including using superior seeds.

Table 3. Identity of Respondents by Education

Education	Percentage
Elementary School	43,30
Junior High School	8,30

Senior High School	48,30
University	0,00
Amount	100,00

Source: data processed, 2018

Based on table 3, it can be seen that respondents (farmers) have a primary education level (SD) of 43.3%. The level of education of farmers is one of the determinants of success in farming. Based on table 3 above, it can be seen that farmers who received soybean seeds and POC assistance were still in the low category.

Response is the result of stimulus behavior, namely the activity of the person concerned, regardless of whether the stimulus can be identified or cannot be observed. The response will be related to the stimulus, so if the stimulus occurs then a response will follow (Gibson et al, 988). The influence of the independent variables (age, field area, education) on the responses of farmers in the use of POC, viewed from the knowledge possessed is positive, with a constant of 2.328 and the coefficients for each variable are as follows: 0.286 for age variables, 0.018 for field area variables and 0.239 for the education variable, of the three variables, the field area variable has no significant effect.

Increasing the level of education, farmers' knowledge will increase. This is in line with the aim of education, that education is intended to increase the level of knowledge of the people. Increasing age, will increase knowledge. With increasing age, farmers will have more experience and information, which will increase knowledge.

According to Triandis (1971), attitude as an opinion accompanied by feelings that determine the action of an object. Whereas according to Ajzen, and Fishben (1970), attitude is a tendency to consistently provide pleasant or unpleasant responses to an object, this tendency is the result of learning, not traits.

Table 4. Results of Regression Analysis

	Variable	Koef	t	Sig.	R <sup>2</sup>	F	Sig.
Knowledge	Constants	2,328	5,822	0,000	0,189	4,350	0,008
	Age	0,286	3,029	0,004			
	Field Area	0,018	0,102	0,919			
	Education	0,239	2,240	0,029			
Skill	Constants	2,861	6,488	0,000	0,017	0,323	0,809
	Age	-0,066	-0,635	0,528			
	Field Area	0,133	0,684	0,497			
	Education	-0,066	-0,563	0,575			
Attitude	Constants	1,156	2,543	0,014	0,318	8,705	0,000
	Age	0,299	2,785	0,007			
	Field Area	0,829	4,139	0,000			
	Education	0,038	0,315	0,754			
Amount	Constants	2,381	11,836	0,000	0,158	3,492	0,021
	Age	0,054	1,145	0,257			
	Field Area	0,217	2,440	0,018			
	Education	0,055	1,020	0,312			

Source: data processed, 2018

Table 4. shows that the response in terms of farmers' attitudes shows that the age, field area and education have a positive influence. The area of arable land provides the greatest influence compared to age and education. Farmers will be better able to accept the application of POC usage along with the increase in arable land. One of the considerations is in terms of costs, with the same field area the costs incurred for POC are less compared to chemical fertilizers.

Overall, farmers' responses seen from their knowledge, skills and attitudes are positively influenced by age, education and the field area. Significant influence is the variable field area.

### III. CONCLUSION

- 1) The response of farmers in the use of organic fertilizer is influenced by the age, arable land area and education owned by farmers. The higher the education, the cultivated land area and the age of the farmer, the response to the use of POC will increase.
- 2) Based on the response given by farmers, marketing liquid organic fertilizer (POC) will be more effective if it is aimed at farmers who have more than 2100 m<sup>2</sup> of cultivated land

### IV. ACKNOWLEDGEMENT

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