Farmer’s unwillingness to grow soybean

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Abstract. Soybean commodity is an essential and strategic food crop because food is an essential need for human beings. Aceh is one of the provinces in Indonesia which has become the center of soybean production. However, in recent years, Aceh’s soybean production has declined; this is due to the growing interest of farmers in soybean farming. This study aims to analyze the causes of reduced interest of farmers in soybean commodity farming and to map farmer’s interest in soybean farming. The research method used was descriptive qualitative and collecting data using survey techniques. The results showed that soybean farmers in Pidie Jaya District had good interest and knowledge about soybeans, while soybean farmers in Central Aceh Districts and East Aceh Districts had low interest in soybean affairs and quite good farming ability. The cause of the reduced interest of farmers in soybean business decreased by the low selling prices at the farmer level, pests, prices, and also the limited market that accepts soybean commodities. The percentage of soybean farmers in Aceh Province, which still operates soybeans in Aceh Province, is 27%, while 73% have switched to other commodities.

1. Introduction

Soybean is a native plant from mainland China that has been cultivated by humans since 2500 BC and Indonesia knows it since the 16th century. Soybean commodity is an essential and strategic food crop because food is an essential need for human beings.

Soybean consumption in Indonesia increases every year. Indonesian people use soybean for the production of tofu, tempeh, and soybean sauce. In addition to food needs, soybean is currently also used as raw material for textiles, paints, inks, and paper. As Indonesia’s population continues to grow where it is in dire need of these raw materials, the demand for soybeans in Indonesia is growing. This situation is an opportunity for agribusiness actors in Indonesia, especially soybean farmers, soybean marketing actors, and industries made from soybeans.

Various attempts have been made by the government to meet the needs of soybeans. The Ministry of Trade conducts import policies, the number of which is increasing every year. On the other hand, the Ministry of Agriculture is implementing a program related to increasing soybean production by providing seedling assistance and assistance to farmers. Based on Figure 1, it appears that government policies related to soybean have not succeeded in increasing production significantly. However, the number of imports has increased significantly. This phenomenon shows that the need for Indonesian soybeans is highly dependent on the production of other countries. Such conditions make it increasingly difficult for Indonesia to be independent in meeting the needs of soybeans and determining the price of soybeans. Soybean prices in Indonesia are highly dependent on world soybean prices, which will have an impact on people’s purchasing power.
Aceh is one of the provinces in Indonesia which has become the center of soybean production in Indonesia. However, in recent years, Aceh's soybean production has decreased (Figure 2).

Aceh's soybean production only increased in 2014, in that year the government held an expansion of planting area program from the ministry of agriculture and guaranteed a price of Rp 7,500 / Kg from the ministry of trade. The extent of the soybean area increased 70% from the previous year, and Aceh had experienced a soybean harvest in 2014. However, the increase in soybean production does not go hand in hand with a high purchasing power. As a result, the profits gained by farmers from soybean farming were minimal.

(1) states that there are several soybean problems currently faced; (a) the interest of farmers to grow soybeans is declining because of market prices that have not been profitable for farmers and high price
fluctuations and low added value; (b) land that is supposed to be managed by soybean commodity farmers for other crops that are more profitable, the transformation of the planting area of soybean commodities into other commodities occurs; (c) the availability of seeds is not right or according to planting time and certified soybean seeds are still tough to obtain by farmers in the field; (d) farming capital is very limited; (e) yield-sharing partners as providers of inactive capital; (f) climate factors and the attack of plant-disturbing organisms affect the decline in soybean production.

Some researchers have researched the fulfillment of soy needs. (2) Found that China also experienced difficulties in meeting its soybean needs in the country. One reason for this is that the proportion of the population not involved in food production continues to increase in addition to climate change, extreme pollution, reduced fertile land, and depletion of aquifers.

(3) conducted a computerized simulation and concluded that soybean production could be produced to meet the demand for soybean demand in Indonesia for 20 years by increasing land expansion at least 70% per year, using seeds with a minimum production level of 2.4 tons/hectare or using old seeds short of being able to increase the planting index at least 2.0, the use of biological fertilizers that can increase seed productivity at least 125%.

According to (4) to be able to meet the growth of sustainable food production and reduce rural poverty, it takes the assistance of farm families to develop more productive, profitable, resource-efficient and environmentally friendly agriculture. Farmers are dealing with falling product prices and rising production costs. Farming families should try to maintain their income by intensifying their agriculture, growing more crops, and increasing the use of irrigation and agrochemicals.

(5) Conducted a study to determine the response of soybean farmers to changes in prices and climate in the Special Region of Yogyakarta. The results showed that the increase in soybean prices did not provide intensive for soybean farmers to increase their planting area, this was caused by consumers who were mostly tofu and tempeh producers were not interested in buying local soybeans because the quality of imported soybeans was better to be used as raw material for tofu production and tempeh. Rainfall is also still a consideration for soybean farmers to increase the area of planting due to the soybean varieties used, which are very responsive to water.

From previous research studies, it appears that the problem of soybean production is very complex, and no one has seen the tolerance or interest of farmers in soybean plants. Problems that exist in soybean commodity make farmers increasingly lose interest in conducting soybean farming. Aceh has a high potential for soybean production, so in this study, we analyze the causes of the reduced interest of farmers in soybean commodity farming and map the interests of farmers in soybean farming.

2. Research Method

2.1. Research Types and Methods
The method used in this study is the survey method in which this method of determining the sample taken against a portion of the existing population. Meanwhile, other methods used in this research are documentation by studying books and literature research, written notes, and so on that are relevant to the purpose of this research.

2.2. Place and Time of Research
Research is conducted in four districts in the province of Aceh, which consists of Pidie Jaya District, Central Aceh District, and East Aceh District. Selection of the location of the research is based on the results of the calculation LQ (Location Quotient) with criteria LQ > 1 by using the data area harvested districts and the data area harvested province of commodity soybeans in the year past. Time study conducted of the month June 2018 - September 2018. The search formula LQ (Location Quotient):
2.3. Objects and Space Scope of Agriculture
The object of research is soybean farmers in the Pidie Jaya Districts, Central Aceh Districts, and East Aceh Districts. Space scope of the research this is to analyze the cause of the decrease in the interest of farmers in farming soybean and mapped the interest of farmers in farming soybeans.

2.4. Population and Sample
The population in this study were soybean farmers who are in Pidie Jaya District, Central Aceh District, and East Aceh Districts. Mechanical determination of the samples in this study using techniques Quota sampling. The number of samples in this study was 60 soybean farmers. They are farmers who cultivate soybeans or have done cultivation.

2.5. Data Analysis
To find out the interest of farmers in the farming of soy, then used the analysis of scoring with the approach of scale Likert. The consideration is based on the development of a scale to measure people's attitudes towards a particular aspect known as the Likert scale (6). Based on the measurement results of the response indicators which include: perceptions, motivations, attitudes, skills and farmers' participation in soybean farming as determined as follows: If the total score is between 8-11 (keen farmers' interest), between 5-7 (farmers' interests medium), between 1 - 4 (farmers' interest is weak). Furthermore, this study uses a qualitative descriptive analysis method to map the interests of farmers growing soybeans.

3. Results and Discussion
3.1 Profile of Respondents
The average age of respondents in the three study sites varies. The average age of farmers in Pidie Jaya Regency is 56 years, in Central Aceh District, 48 years old, while in East Aceh District is 35 years. Farmers in the three research areas are in a productive age for farming (15-64 years) and also have the adequate physical strength and mental stability, so they tend to be able to run their businesses well. Furthermore, Table 1 showed that the average formal education level of the respondent is a primary school. This condition will increase the level of knowledge and rationality in doing business, even though a person can gain knowledge without going through formal schooling (7).

| Farmer profile description | Pidie Jaya | Central Aceh | East Aceh |
|---------------------------|-----------|--------------|-----------|
| Age (years)               | Min – Max | Mode         | Min - Max | Mode     | Min - Max | Mode |
| 28 – 70                   | 56        | 28 - 72      | 48        | 25 - 64  | 35        |
| Experience (month)        | 6 – 240   | 120          | 6 - 360   | 12       | 6 – 540   | 36   |
| Duration of education (years) | 6 – 12   | 6            | 6 - 14    | 6        | 6 - 12    | 6    |
| Revenue (Rp/MT)           | 1,200,000 – 13,000,000 | 5,000,000 | 0 -10,000,000 | 2,200,000 | 0 – 5,000,000 | 3,000,000 |
| Land Size (Ha)            | 0.12 – 2  | 0.5          | 0.05 – 0.87 | 0.18     | 0.2 - 2   | 1.0  |

Meanwhile, the average long experience of farming of soy in all three different districts - different soybean farmers in the of Pidie Jaya District generally have a longer experience of 10 years while soybean farmers in Central Aceh District just a short growing soybeans that is only a year, in contrast to soybean farmers East Aceh District having an experience of farming soybeans for 3 years. The income of farmers in the three districts is also different, and the highest average income is owned by soybean farmers in the Pidie Jaya district. The farmer income in the Pidie Jaya District, Central Aceh District,
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and East Aceh District respectively are Rp. 5,000,000 /MT; Rp. 2,200,000 /MT; Rp. 3,000,000/ MT. Meanwhile, for the area of soybean farmers in East Aceh District has a wider land compared to the Pidie Jaya Districts and Central Aceh Districts, which is equal to 1 Ha. But the vast land does not affect the farming of soybean intensive. This is due to their goal of doing soybean farming only for distractions so that their plantation land is not empty while waiting for cocoa, areca nut, and oil palm commodities to grow.

3.1.1 FIGs in Farming Soybean in Aceh Province

The results of the scoring analysis through a Likert scale approaching the interest of farmers in soybean farming in the study area revealed a tendency to weaken. This is indicated by the results of the average total score of four indicators (perception, motivation, knowledge and attitude) in Pidie Jaya Districts, Central Aceh Districts, and East Aceh Districts where the average total score is located in the low group and moderate (1 - 4 and 5-7). The level of interest in growing soybeans in Aceh Province can be seen in Table 2.

Table 2. Level of interest in growing soybeans in Aceh

| Description of Interest in Agriculture | Interest in Soybean Farmers in Aceh Province |
|----------------------------------------|-------------------------------------------|
|                                        | Pidie Jaya | Central Aceh | East Aceh |
| Farmers' Perception                    | 7          | 1            | 1         |
| Farmer Motivation                      | 7          | 3            | 1         |
| Farmer Knowledge                       | 7          | 7            | 7         |
| Farmer's Attitude                      | 7          | 1            | 1         |

Source: 2018 Primary Data, processed

Based on the calculations score, soybean farmers in Pidie Jaya Districts has interests that are in the farming of soybeans. The score of soybean farmers in Pidie Jaya, who is on a scale of 7. According to the soybean farmers in Pidie Jaya, farming soybeans is still profitable for farmers to sell soybeans in the form of seeds; the selling price obtained by Pidie Jaya Districts farmers is also higher, namely Rp. 7,500 - 10,000 / kg, which will then be purchased and certified by the Aceh Province agricultural sector. Knowledge of farmers in farming soybeans is also included in the category of being, that in the face of climate and plant pests, farmers know the effort must be made to overcome the effects caused by climatic factors and plant pests attack. The attitude of farmers in Pidie Jaya Districts is also on a medium scale, which means farmers are still trying in general ways to make soybean farming sustainable.

Meanwhile, the soybean farmers in Central Aceh Districts and East Aceh Districts showed interest weakness in farming soybeans, but the ability of farmers in the two districts are on a scale of 7, that they know what efforts should be made to overcome the effects caused by climatic factors and pests plant. The attitude of soybean farmers in both these districts tend to be reluctant to strive against the impact caused by climatic factors and plant organisms, according to farmers who do their business in the farming of soy are not outweighed by the advantages they can get soybean sales price level, farmers are very low which resulted in income of farmers from farming soybeans slightly. The low selling price at the soybean farmer level is caused by the low bargaining position of farmers, namely farmers only act as price takers. The price set by the collecting traders to farmers tends to be low and far from the market price, so the benefits obtained by farmers are very small. This has influenced farmers who do not dare to engage in soybean cultivation due to price risk.

3.1.2. Causes of Reduced in Farming Soybeans in the Province of Aceh

Based on the survey results, several problems were found that resulted in a decrease in the interest of farmers to cultivate soybean in Aceh Province. Recognized farmer's help given by the government is considered inefficient. Data collection and determination of prospective farmers and prospective land
are considered not on target so that the provision of soybean seed aid is too evenly distributed to all farmers. Farmers who do not have the expertise to cultivate soybeans also grow soybeans because they get help, besides the quality of soybean seed assistance provided is a variety of poor quality, while soybean farmers only rely on seeds from government assistance. This problem results in decreased soybean production, and the quality of soybeans produced is not good.

When viewed further, the quality of soybeans also affects the selling price, moreover it must compete with imported soybeans which have better quality than local soybeans. At present, the selling price of soybeans at the farm level ranges between Rp. 4,000 - 7,500/ Kg, which is still very far from the cost of maintaining and planting soybeans. The problem of marketing soybean commodities is also faced by farmers. Almost all farmers have no alternative but to sell to collectors or to the surrounding markets, and this is due to the limited knowledge of farmers about the market and the difficulty of market access due to the distant location of the farm. In addition, tofu and tempeh craftsmen are not interested in buying local soybeans sold by farmers, because local soybeans are smaller and less dense; they are more interested in using imported soybeans. Therefore farmers only sell to collectors or sell themselves to the market around the sub-district market.

Some of the problems encountered in the farming of soy causes growing farmers lost interest and move on to plant another commodity which has the advantage of larger, can be seen in Figure 3 only 27% of farmers are still interested in doing farming soybeans while 73% percent of the farmers who have switched to other commodities, such as soybean farmers in Central Aceh District were more interested in farming red beans according to their farming red beans more profitable when compared with farming soybeans, red beans selling prices offered to farmers is Rp. 7,500 – 10,000 / Kg very far compared to the price of soybeans. In addition to soybeans, soybean farmers in Central Aceh also switched to planting chili, tomato, and onion commodities. Same as Central Aceh Districts soybean farmers, East Aceh Districts soybean farmers have also shifted commodities to plantation commodities such as palm oil, areca nut and cocoa, in addition to the low selling prices and limited markets, another cause is the location of their land that is prone to flooding, so farmers in this district switch to commodity development. If we don't care, many soybean farmers who have switched to other commodities not only resulted in a decline in soybean production in the Province of Aceh, Aceh Province no longer feared to be the center of soya bean production in Indonesia, unfortunately when it happens. It should be that both farmers and the government play a role in the sustainability of soybean commodities in Aceh Province,
starting from the provision of certified seed assistance. The role of active extension workers, the availability of accommodating partners and markets, as well as the guarantee of selling prices.

4. Conclusion

Farmers soybean Pidie Jaya Districts have an interest and knowledge of farming soybeans being, while soybean farmers in Central Aceh Districts and East Aceh Districts have a low interest in farming soybeans and ability farming being. The cause of the reduced interest of farmers in farming soybeans is caused by the low selling price level, farmers, and also the limited receiving soybean commodity markets. The percentage of soybean farmers in Aceh Province that still operates soybeans in Aceh Province is 27%, while 73% have switched to other commodities.

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