

BIOLOGICAL AGENT INNOVATION AS AN EFFORT TO IMPROVE THE ECONOMY OF FARMERS IN MOJOLEGI VILLAGE, GADING DISTRICT, PROBOLINGGO REGENCY

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Abstract :

The application of biological agent innovation as an effort to improve the agricultural economy in Mojolegi Village, Gading District, Probolinggo Regency is a new breakthrough that started in August 2015. Farmers have started implementing it. Biological agents, this application is one way for farmers to overcome the expensiveness of synthetic fertilizers and also to prevent the bad effects that synthetic chemicals will cause. The negative impacts that will occur on yields and agricultural land due to excessive use of synthetic pesticides in the long term. This biological agent was first applied by Mr. Gatot Suprianto, then invited several people to participate in implementing innovation and creativity with this biological agent. As a pioneer or initial bridge that brought biological age innovation to Mojolegi Village, he did not want what he got after becoming a representative for the production of biological agents which was carried out by the Probolinggo central agricultural sector in 2015 to not be realized well. This activity succeeded in attracting the attention and interest of other farmers to follow how to make and apply these biological agents. From the research in Mojolegi Village, 3 results were obtained, namely: The Influence of Biological Agent Innovation on the Economy of Farmers in Mojolegi Village, Application and Innovation of Biological Agents in Mojolegi Village, Mojolegi Village Farmers' Views on the Beginning of Biological Agent Innovation

Keywords: Economic Improvement, Farmers, Biological Agents

INTRODUCTION

Mojolegi Village is a village located in Gading sub-district, Prbolinggo district, East Java Province. It can be seen from the population census that in 2020 Mojolegi village had a population of 2,596 people. Residents in Mojolegi village have a variety of livelihoods such as trading, farming, migrating and so on. In

Mojolegi village, the population's biggest source of livelihood is farming or farming. The agricultural products from Mojolegi village are quite diverse, from rice, corn, vegetables, fruit and wood seeds. The largest agricultural product produced by Mojolgi village is rice.(Kristiyanti, 2016)

This is related to the topography of the region, which includes areas that have loose and fertile soil, with quite extensive stretches of rice fields. So it is very suitable as a farming practice, therefore the biological agricultural innovation which started in 2015 in August really helped agricultural development to increase their agricultural yields, with this main function maintaining soil looseness, ensuring that agricultural products remain of high quality and safe, as an effort to prevent environmental damage(Witarsa, 2015), which will have a very bad effect if the use of pesticides continuously or in the long term will cause agricultural products from Mojolegi village to be of poor quality and unhealthy for consumption.(Rahayu, Hadi, & Widiyawati, 2019)To maintain agricultural yields, Mr. Gatot invited the community to apply biological agents and throw away the habit of using chemicals in the past and now is the time to switch to biological agents.

Many farmers in Mojolegi village still use this synthetic pesticide because there are still many who do not really believe in the function of environmentally friendly control, which is commonly called a biological agent. Many farmers are still not aware that liver agent innovation can improve their economy. Biological agents are an environmentally friendly and safe alternative for disease control for the sustainability of agricultural systems. The introduction of biological age innovation is a program launched by the government of agricultural institutions which really functions to improve the community's economy, apart from more affordable prices, it will also enable farmers to ensure high quality and sustainable cultivation of their farming. Therefore, it has a big influence on the economic development of farmers in Mojolegi village. In this day and age, it is difficult to find healthy food ingredients, so consumer demand for healthy agricultural products is increasing day by day. Therefore, farmers in Mojolegi village have also started to apply biological agents which since their innovation have really helped the growth of the community's agricultural output. which was initially pioneered by Mr. Garot Suprianto as head of the rukuntani in Mojelegi village.

Previous research conducted by Dwi Rahmawati, Ariesia Ayuning, and Saiful Mukhlis in their research entitled "Making Liquid Biological Agents Using Potato Media" this type of research is detective research using the approach method using The similarity between previous and current research is that they both use a qualitative method approach, while the differences between current and previous research are as follows The subject of the previous research was in

Lengkong Village, one of the villages in Mumbulsari District, Jember Regency, while in the current research it was in Mojolegi Village, Gading District, Probolinggo Regency. The focus in the previous research was the application and method of making biological agnes, while the focus of the current research is the development of biological agents. Many are in large farming households and can help improve their economy.

RESEARCH METHOD

This research was carried out on March 20 and ended on March 30, located in Mojolegi village. The target subjects for research are the farming community and the Mojolegi rukuntani agricultural agency. For collecting research data. The method used is a qualitative method, namely a method that prioritizes research data for finding results, using a system. This research method is through a system of interviews, surveys, and direct field observations which are then collected as material for this research. And immediately held an interview with the farmer leader, Mr. Gatot Suprianto, and local residents. This research activity was carried out in Mojolegi village, Gading District, Probolinggo Regency, where Mojolegi village is a village whose livelihood is as a farmer. This activity was carried out in collaboration with Mr. Gatot Suprianto as the head of agriculture in Mojolegi village and also the community in Mojolegi village.

FINDINGS AND DISCUSSION

The results of my research were obtained from Mojolegi Village, Gading District, Probolinggo Regency. And based on a sample of research data that I have obtained as well as from the identification of several farmer factors with innovation and the application of biological agents as an effort to improve the farmer's economy, the results are as follows:

The Influence of Biological Agent Innovation on the Farmer's Economy in Mojolegi Village

Before the innovation of biological agents, farmers in Mojolegi village could only plant crops 1 to 2 times a year with the potential to plant the same types of plants as the initial planting. With the innovation of biological agents, farmers are like getting a windfall because they no longer need to worry about growing plants of the same type anymore, this biological age innovation is not only treatment and prevention for pests or diseases in their plants.(Brugman, Purbajanti, & Fuskhah, 2017). But it can also function as soil fertilizer. So with this biological agricultural innovation, farmers will be safe to carry out sustainable planting. Previously, farmers had to wait a long time or change the type of crop after harvest. Because they are afraid that the crops will be damaged, or that the harvest will fail as a result of using sitetech fertilizer, the dosage of which will cause the crop to not produce good results if continuous planting is

carried out.(Bande et al., 2020)

The results of the research show that with the innovation of biological agents, the agricultural graph in Mojolegi village shows that rice farming is the largest agricultural product in Mojolegi village, increasing both in terms of yield and quality produced, this biological agent innovation has had a very good impact on the economy. community in Mojolegi village. In Mojolegi village, the dominant livelihood of the people is as farmers, and the main target for providing innovative biological agents is as a bridge or as a new alternative for farmers so that they can improve the farmers' economy and develop their agricultural products. Without needing to spend a lot of money, the existence of this biological agent innovation provides great benefits for the farmer's economy, one of which is the development of their agricultural products which is increasing, with their agricultural products increasing, estimated at around 25% per year.(Wulan, 2018). Although there was a harvest failure in 2019 due to decreased interest in biological agents that year. After this dark incident, biological agents became increasingly popular because only people who used biological agents did not experience crop failure in 2019. This made them more confident in the positive effects of biological agents.

With the new breakthrough, namely the application of innovative biological agents in Mojolegi village, (Apriyanti, HW 2018) the farmers admitted that they were very happy because it could cure their worries. This is due to the recent uncontrolled surge in prices of synthetic fertilizers. This leaves them stuck in handling farmers' crops, and with the application of this biological agent innovation they have managed to overcome the surge in synthetic fertilizers. With this biological agent, farmers can neutralize costs. To care for their plants, so they can still harvest with the satisfactory results they want without having to spend a lot of money (Arico, Z., & Jayanthi, S. 2018).(Agriculture Lawn.)

Biological agents really help improve the economy of farming communities, said Mr. Gatot, head of agriculture in Mojolegi village. How could it not be from the capital for making biological agents which is only around IDR 40,000-50,00. Can already make 20 liters of biological agent. From this 20L, farmers can apply it to land with an area estimated to be around 0;5ha/liter. and with the application of biological agnes in an area of 0;5ha/liter, it can reach a maximum estimated distance of around 8m or more. The distance of plant land that can be reached by agnes or will be affected by biological agents through the help of grasshoppers or wind which carry the juices from biological agnes . Land that receives the effects of biological agents will have the same reaction as fields that are sprayed with biological agents. Therefore, many applications of biological agaens are more important if carried out in the middle of agricultural land. Since 7 years ago, this biological agent has been applied to produce more abundant

agricultural products and ensure the safety of the agricultural products. In this way, farmers' economic improvement will be more guaranteed.

To expand biological agents, additional relationships are needed as an effort to develop biological agents in Mojolegi village. We have also collaborated with several farms starting from nearby farms such as the Probolinggo Regency Agricultural Dinar farm and also the head of agriculture in the Krejengan subdistrict. These farmers have established relationships and work together to develop this biological agnes innovation so that it can help improve the economic development of farming communities. Farmers or managers of biological agent fertilizers have their own way of developing the system that they took up or implemented for the first time, to introduce and increase the promotion of biological agents, they chose a moth to moth system and collaborated with officials in the village and looked for connections with neighboring farms. . because according to them using such a system will be more effective. Considering that the residents of Mojolegi village and its surroundings still lack technology. This is because the majority of people have only graduated from elementary school or equivalent. However, this does not mean that biological agent innovations will not be published using the internet. This has become a plan for all farmers in Indonesia to feel the good impact of these biological agents. By disseminating biological agents and developing them, it will also have a good impact on improving the economy of farmers in Mojolegi village

Application and Innovation of Biological Agents in Mojolegi Village

Application of biological agents, using the demonstration plot method, which is a medium for demonstration to apply biological agents methods from the oldest and newest versions that utilize agricultural land, and the FFD (farmer fed day) method, namely as a link or exchange of new information between farmers and extension workers or stakeholders.(Rahmawati, G, & Mukhlis, 2016)The application of biological agents in Mojolegi village started in August 2015. When the Probolinggo central agriculture held biological ages training which was held in Nganjuk, West Java for one week, the biological agents training held in Nganjuk was represented by the village agricultural chairman. Mojolegi is Gatot Suprianto's father.

Since completing the 2 week training, precisely at the end of August 2015, Mr. Gatot has implemented the method of making and applying and the positive impact of using biological agents on the Mojelegi community. the trust of the people in Mojolegi village, and then Mr. Gatot held a guide for making Age Hayati for the first time in September 2015. Mr. Gatot held meetings and guidelines for making biological agents with the community at the Mojolegi Village Hall. As well as directly testing the results of the biological agents produced with residents on rice fields where the plantation is located in the

middle of other community plantations. Arifin, N. 2012). This aims to look at the function of biological agents whose handling of pests is not only by spraying them on plants, but also by spreading animals that land on plants that have been sprayed with biological agents and will spread through these animals. The medicine will spread through insects so that it has the same effect on the plants sprayed with the biological agent.(Syatrawati & Inderiati, 2017).

To be able to see the results of this biological age, you have to wait more than 6 hours after applying it to the plant area. Because biological products are made from natural ingredients, it will be a little slow to see the results. So it requires patience to see the effects, after 6 hours or more we can see the pests and plant-damaging insects lying around helplessly and then dying. Insects that die due to their biological lifespan will be different and have a distinctive characteristic, namely that the insects metamorphose into small mushrooms after their carcasses fall to the ground or rotting plants. The beginning of the use of biological agents until now. To make it, pieces of ketang measuring approximately 3-4 cm that have been washed and boiled are boiled in a pan containing 20 liters of clean water. Then drain it and then take the steaming water from the potatoes to extract the juice from the potatoes. Once it is cold enough, then put it into the gallon. Add 1 kg of sugar to the stekah to dissolve. Each makes 20 liters of potato juice. Don't forget to also mix it with liquid to form a battery. After the ingredients for making biological ages are mixed. Then put the potato extract into a gallon to settle for a week which will then produce biological agents. Ramdhani, (H., Nulhaqim, et., al 2015).

The method of application is that you can apply biological age to plants from the production stage, it takes about one week before biological age can be applied to plants infected with pests or diseases by watering or spraying around the plants. The recommended dose level is around 3 liters/ha. For biological age solutions, it is around 5cc/liter of water(Syatrawati & Inderiati, 2017). The application of biological agents to be more effective is usually done during the day around 6 am to 9 am. This aims to then wait around 6 hours after spraying before you can see the performance of biological agents. Biological agents include compost which can choose its own ingredients independently, not all small animals will die, only types of animals or pests that can damage plants will be destroyed by biological agents (Gazali, A. 2015)

Mojolegi Village Farmers' Views on the Beginning of Biological Agent Innovation

Biological ages, which is a new breakthrough in Mojolegi village, must be able to convince and change the community's mindset to switch from chemical pesticides. The application of biological agents is a new innovation for farmers in Mojolegi village. Every farmer is free to have a perception of new innovations in

the form of biological agents.(Sumenep, 2022)Since the introduction of new innovations, quite a lot of people have been interested in biological agents for about 2 months. There are already around 40% of the dominant 100% who have shifted direction to biological agents. The main reason why people choose to follow biological age innovations is that they are also environmentally friendly and will create Their land remains fertile with healthier crops for consumption. They also consider the benefits (Alfayanti et al., 2001.) to be greater if they use biological ages because making biological ages is much cheaper than buying the chemical pesticide fertilizers they usually use.

For those farmers who choose to continue using the synthetic pesticide fertilizers they usually use because they want fast or instant results without rust. although without them realizing it, long-term use of synthetic pesticides or overfeeding will damage their land. It will also result in plant products that are less healthy for the body to consume.(Eka Kusumawati & Istiqomah, 2020)The public's perception is that they are not very interested in biological age innovation and that making biological agents is too complicated, in their opinion, besides that, it also takes a lot of time, energy and thought. Not to mention that they have to wait more than 6 hours to see the results of the biological agent's work. (H Kara, OAMA 2014).

Because most people have the same complaints, more and less people want to apply biological pesticides, this does not shake the hearts of people who choose biological pesticides, because it is not easy to convince people to change the mindset of people who have been using chemical pesticides for decades. This is a big homework for Mr. Gatot is the originator of the first living ages in Mojolegi village. To solve the precession intersection and to reassure the community, the agricultural chairman, Mr. Gatot, invited the residents to work together to create a common biological age which was then traded to other communities. These biological agents are traded while providing outreach to the public about the many benefits of using biological agents (Indriyani, YA 2016).

Since the farmers' failed harvest in 2019 in Mojolegi village, this has changed the public's view of biological agent innovation in Mojolegi village. Those who initially weren't very interested and didn't look at this biological agent innovation because it was quite complicated to make and offered results that still took around 6 hours to wait. can change society's view of biological agent innovation by around 75%. Because they saw that only residents who used biological agents did not fail to harvest at that time. It was estimated that the harvest failure at that time was caused by unhealthy soil conditions due to the use of synthetic pesticides continuously or in the long term, so after listening to the counseling on biological agents at the village hall which was carried out in mid-2019, the community became more aware of the positive effects of using

biological agents. towards their crops. (Rahmawati, & Mukhlis, S. 2016)

CONCLUSION

Biological agents are one of the new innovations for the community in Mojolegi village, especially for farmers. The creation of biological agents provides many benefits for farmers to improve the economy of farmers in Mojolegi village and foster the creativity of farmers there. The thing that has a big impact on farmers from biological agent innovation is the price of making them. which is very affordable compared to synthetic pesticides which are much more able to increase the economic growth of farmers in Mojolegi village, also the application of biological agents is an appreciation of farmers' love for the environment, because the innovation of biological agents is a safe, environmentally friendly method that is safe to use in the long term and has an impact good for farmers' soil fertility so that farmers can carry out sustainable agricultural management

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