Volume 7 Number 2 (2024)
July-December 2024
Page: 257- 282

E-ISSN: 2655-3686
P-ISSN: 2655-3694
DOI: 10.37680/muharrik.v7i2.6477

Muharrik
Jurnal Dakwah dan Sosial

Islamic Eco-Theology in Practice: Revitalizing Environmental Stewardship and Tawhidic Principles in Agricultural Community

Agus Afandi [1], Sjafiatul Mardliyah [2], Asia Ashfaq [3], Muhammad Saud [4]

[1]Universitas Islam Negeri Sunan Ampel Surabaya, Indonesia; agusafandi@uinsa.ac.id
[2]Universitas Negeri Surabaya, Indonesia; sjafiatulmardliyah@unesa.ac.id
[3]Bahria University, Islamabad, Pakistan; asiaashfaq.buic@bahria.edu.pk
[4]Universitas Airlangga Surabaya, Indonesia; muhammad.saud@fisip.unair.ac.id

Received: 11/10/2024 Revised: 06/12/2024 Accepted: 30/12/2024

Abstract

This article describes the development of environmentally friendly farming patterns through organic farming practices, sustainable pest control, the application of monotheistic values in agriculture, and the role of farmer groups as learning platforms. The research method employed is Participatory Action Research (PAR), involving collaboration with farmer groups and the community. The steps include in-depth research using Participatory Rural Appraisal (PRA), strategic planning, resource mobilization, and the development of critical awareness. The collaboration process includes experimenting with organic farming, analyzing agricultural conditions, seasonal calendars, power relations, and planning for environmentally friendly farming. Farmer groups learn from other organic farming communities, practicing the production of compost, liquid organic fertilizer, botanical pesticides, and land processing. The study of Agricultural Tawhid strengthens the spiritual dimension in farming. The outcomes include awareness of the importance of environmental conservation by reducing chemical usage, replacing it with natural materials, and developing skills in environmentally friendly farming practices. This awareness is grounded in the perspective that farming is an act of worship and a noble endeavor to provide sustenance for humans and other creatures.

Keywords farming, environment, theology, Islam

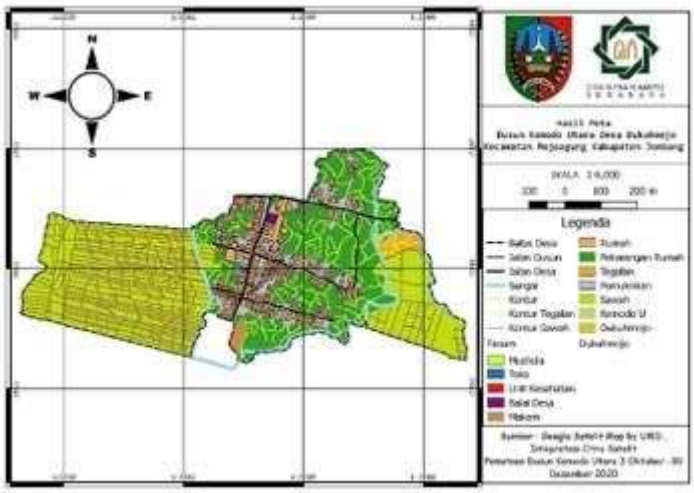
Corresponding Author
Agus Afandi
Universitas Islam Negeri Sunan Ampel Surabaya, Indonesia; agusafandi@uinsa.ac.id

1. INTRODUCTION

Frequent crop failure is a problem experienced by farmers in North Kemodo Hamlet. This hamlet is part of the Dukuhmojo Village area, Mojoagung Sub-district, Jombang Regency, East Java. Agricultural conditions in the hamlet are influenced by many factors. Pest attacks, including leafhoppers, rats, blast, and other pests, have become commonplace, even though there has been no resolution to the problem. Complaints about farmers' losses due to crop failure have never been taken seriously by the relevant parties because there has been no program to help farmers who have failed in their farming business. Discussions with farmers in North Kemodo Hamlet, held on November 15, 2021,

revealed that the peak of crop failure was experienced by farmers in the 2020-2022 harvest season. Almost all farmers experienced failure. The failure occurred mostly because their rice plants were attacked by leafhoppers, blast, and rats. Meanwhile, corn crops were mostly attacked by rats. Each farmer, who should have harvested 7-9 tons of rice per hectare, only harvested 1 ton or none at all because their rice fields were burned or left unharvested due to severe damage. Of the 31,210,635 m² of farmland, the loss per hectare is between 7-10 million rupiah from farming operational costs, so the overall loss can reach around 1 billion rupiah in one year with three planting seasons.

Figure 1
Map of agricultural land area in Kemodo Utara Hamlet



Source: GIS mapping results of PMI Study Program in 2020

Basically, the failure of farming experienced by farmers in Kemodo Utara Hamlet is not the first time. It has occurred over the last 20 years. This is caused by the peak of environmental damage they have experienced, which is also triggered by their own behavior, though they do not realize it. The use of chemicals as fertilizers and pesticides has become toxic, a situation that has developed massively since the launch of the Green Revolution in the 1960s (Gaur et al., 2021). The use of IR (International Rice) seeds, chemical fertilizers, and chemical pest killers has always been practiced by farmers. The use of toxic pesticide chemicals seems to be a habit and ambition to obtain large profits (Hikmawati, 2021). If calculated in general, the use of chemical fertilizers and poisons in this hamlet is very high. Farmers noted that if each hectare uses 7.5 kw of chemical fertilizer every planting season, then in one year, with three planting seasons, each hectare uses 22.5 kw. Therefore, every year, agricultural land in North Kemodo Hamlet spreads 697.5 kw, or 69.7 tons, of chemical fertilizers. Similarly, if it is estimated that the use of chemical poisons every planting season is 1 liter per hectare, then in one year, the agricultural land in this hamlet spreads as much as 93 liters of dangerous chemical poisons. If this has been happening for 60 years, then this area has been treated with 41,850 kw of chemical fertilizers and has been spread with 5,580 liters of chemical poisons.

The habit of using chemicals also occurs in almost all agriculture in Indonesia. As an agricultural market, Indonesia is an easy target for chemical fertilizer and pesticide entrepreneurs. The use of these chemicals is considered commonplace. Every time pests, plant disruptors, weeds, fungi, nuisance animals, or extreme weather conditions are found, chemicals, both fertilizers and pesticides, are used (Hikmawati, 2021).The impact of the behavior of using hazardous chemicals was not felt at first, but

now it has become apparent, namely the destruction of the environment. The destruction of soil structure is due to the killing of soil organisms that trigger fertility and plant growth. Likewise, pests are becoming more immune because the more poisoned pests experience a process of self-strengthening in their offspring.

Most farmers in Kemodo Utara Hamlet do not understand the massive side effects of using chemical fertilizers and pesticides on their living environment. The land and water, which are the main foundations of the farmers' lives, have been systematically damaged. The solution they have implemented in farming so far has only been to increase the volume of fertilization, but this actually damages the plants. Although the plants initially appear green and grow well, when the generative period begins and they start to bear fruit, they will immediately collapse. Similarly, when there is a pest attack, they use chemical pesticides. If that does not work, they increase the volume of the pesticide dose. If that still does not work, they switch to another brand of pesticide, and so on. Not to mention the massive and unexpected rat infestation. One day their crops are green and look lush; the next day, their crops are suddenly destroyed because they were attacked overnight by hundreds of rats in their rice fields. They have used various brands of rat poison, but the rats could not be eradicated completely; in fact, they have become even more rampant.

This can be described as "chemical addiction." Even though they experience failure with the use of chemicals, they continue to use them as if they don't care about their failures and the impacts they cause. Indeed, the widespread use of chemicals has allegedly caused environmental damage to soil, animals, and fauna. The dependence on chemical fertilizers that has emerged recently shows that the plants farmers cultivate seem unable to grow and produce if they are not given chemical fertilizers (Yulipriyanto, 1997). Chemical hazards from the continuous use of chemical fertilizers and pesticides have posed serious environmental threats to plants, soil, water, animals, and humans (Shiva, 2000). This pattern of consumption of hazardous chemicals is also influenced by the media, which always encourages the use of the necessities offered. It is considered a solution. In fact, it creates pollution and affects environmental damage (Farid & Saputra, 2021).

One of the things that should be observed from the failure of the farming business of the North Kemodo Hamlet community is that the spirit of *Tawhid* has begun to disappear in their farming activism (Torres Fernández, 2024). The belief that planting is worship has started to fade. The conviction that planting crops, farming, and agricultural activities are acts of worship is no longer part of their beliefs. This is reflected in their farming practices, which no longer pay attention to an important aspect of religion, namely almsgiving, which has been realized through a selamatan ceremony. The ceremonies before planting and during harvesting are no longer held. They believe that farming is already unprofitable, so why should they give alms at all? Moreover, the harvest system now uses a wholesale pattern in rice fields through middlemen, so alms, zakat from the harvest, and giving part of the harvest to neighbors are no longer practiced. Therefore, it can be said that the ecological crisis is caused by one of the factors: the rejection or abandonment of the spiritual dimension in addressing and relating to the environment or ecology (Irawan, 2017). The spiritual dimension that should be the most important part of farming has been neglected. By planting, a farmer has given alms to oxygen, alms to organisms that live in the environment around the plants, and the harvest becomes food for human life (Ikhtiono et al., 2020). This kind of understanding is lost because the orientation of farmers is solely on the results that are capitalized for the market. While all farmers in this hamlet are santri, who are deeply rooted in traditional Islam, the tradition of selametan has not disappeared completely; however, *selametan* for farming activities has simply vanished (Fatchan & Soekamto, 2015).

Almirzanah's view asserts that Islam emphasizes eco-theology as a practical ethic that controls and shapes human behavior towards the natural environment. This perspective views creation as God's self-disclosure, so that each element has its own intrinsic meaning, and there is a sincere and deep respect for the integrity of all His creations (Almirzanah, 2020). The fundamental teachings of Islam, based on *Tawhid*, mean that it highly values the environment because the environment is a mandate from Allah SWT that must be maintained and preserved. Planting trees or other vegetation not only provides economic or aesthetic benefits but also helps maintain ecosystem balance, filter air, reduce pollution, and prevent soil erosion. All of these benefits reflect the human obligation to take care of Allah's creation, which is also part of worship (Heba Hasan, 2022).

However, the dependence on chemical fertilizers and pesticides has created environmental damage (Savci, 2012). This environmental damage has led to the failure of North Kemodo farmers' farming businesses, resulting in significant economic problems. Their farming business took a heavy toll, and they began to sell their agricultural land to other parties. Some land began to change functions into settlements and industrial establishments. Farmers started to change professions to become factory workers or mobile food and beverage sellers, such as ice, meatballs, and chicken noodles. This change of profession has made their livelihood more uncertain.

There are several previous studies that are relevant to the author's article, such as the findings of research conducted by Baharuddin, which show that the activities carried out by the Pelita Hati women farmers group effectively increase the knowledge and skills of participants in processing household organic waste into organic fertilizer using a composter. The Pelita Hati Women Farmers Group of Sidomulyo Timur Village, Mapoyan Damai, Pekanbaru City, Riau, involved three main stages in implementing the program: counseling on the benefits and processing of organic waste, practical demonstrations of composting techniques, and evaluations to measure participants' understanding, all of which contributed to a successful learning experience for members of the women farmers group (Baharuddin et al., 2023). The research conducted by Gaina describes the empowerment of farmers in Camplong II Village, Kupang Regency, East Nusa Tenggara. This activity involves training them to produce organic fertilizer, specifically Bokashi, from animal manure. This process improved their knowledge and skills in waste management, enhancing soil quality and crop yields. The use of Bokashi, which contains effective microorganisms, increases organic matter and nutrients in the soil, leading to better agricultural productivity. As a result, this initiative not only supports sustainable agricultural practices but also increases household income for farmers, fostering community development and resilience (Gaina et al., 2021). The next exploration involves community service activities as an effort to empower microgreen cultivation by providing knowledge and skills to improve food security and nutrition. This pattern was developed by the Women and Environment Studies (WES) Payungi South Sumatra community. This community developed the concept of microgreens for environmentally friendly agriculture. The approach taken with the Community-Based Research (CBR) method focuses on local assets and potential. The program developed involves growing microgreens for personal consumption and sharing knowledge with others (Hifni Septina Carolina et al., 2023). Microgreens are young vegetables produced from vegetable seeds that have two fully developed cotyledon leaves and have grown young main leaves (Treadwell et al., 2020). Microgreens are a type of vegetable that has a higher nutrient and vitamin content than ordinary vegetables (Riggio et al., 2019).

Based on the description of the results of the service and previous research, it can be seen that this research has clear differences. The difference lies in the aspect of program objectives; namely, the farmers of Kemodo Utara Hamlet have organic farming skills and apply them with the concept of *tawhid*

in their farming life. The previous services from the first, third, fourth, and fifth appear to be only training efforts, lacking a comprehensive approach that includes conducting joint research and discovering their own patterns in organic farming. This is because the approach has been limited to socialization, training, and Participatory Rural Appraisal (PRA), which tends not to demonstrate a more participatory and critical process. This research was conducted using the Participatory Action Research (PAR) approach, which aims to build critical awareness of the position of farmers who have been marginalized by agricultural policies thus far, so that social transformation efforts are directed towards the independence and sovereignty of farmers through organic farming. In addition, it will also apply the concept of tawhid as the main spirit in carrying out cropping, which has so far been diminished or uprooted from the beliefs of farmers.

2. METHOD

The method used in this research is Participatory Action Research (PAR), which is illustrated in the rotating stages and steps (Afandi et al., 2017). Starting from the "to know" stage, the aim is to understand the real conditions of the research subjects in the North Kemodo Hamlet community. The techniques used are Rapid Rural Appraisal (RRA) and Participatory Rural Appraisal (PRA). These techniques are employed to build initial participation and create community trust through inculturation techniques, geographical mapping, transectoral analysis, and problem focus selection. Together with the farming community (administrators and members of the North Kemodo farmer group), researchers held discussions to analyze the condition of agriculture over the past twenty years. They also assessed the results of their farming efforts, analyzed the conditions of change (trend and change), and examined the flow of agricultural history (hierarchical timeline analysis). From this process, we then entered the stage of understanding, which involves comprehending the problems faced by the research subjects. What the researchers did with the community was conduct a Focus Group Discussion (FGD) at the house of one of the members of the North Kemodo farmer group. This FGD addressed the problems occurring in the agriculture of Kemodo Utara Hamlet using historical analysis techniques, flowchart and Venn diagram analysis, seasonal calendar analysis, and problem tree and hope tree analysis.

After the problem was formulated in a problem tree and hope tree chart, researchers, together with the North Kemodo farming community, carried out the next stage of the process, namely the planning stage. This stage involves planning to solve their problems. It is conducted to plan problem-solving actions faced by the community as the subject of research. This problem-solving planning stage fully involves the community, ensuring that in the next stage, the implementation can be guaranteed and the impact of the changes produced takes the form of joint programs. Technical and non-technical planning is fully described in the program planning, using the Logical Framework Approach (LFA) analysis and the Strategic Feasibility Analysis Matrix. The choice of program as a problem-solving strategy is based on the formulation of problems and expectations that have been agreed upon in the previous FGD stage. The program strategy is linear and logical, connecting the problems that occur, the desired expectations, and the selected program.

The next stage is the implementation of the program or the action stage. This stage involves the practical implementation of the program, addressing problems related to understanding and skills, institutional aspects, infrastructure aspects, and policy aspects. The program is adjusted to the potential assets and resources owned by the community, ensuring that the implementation of the program is not burdensome for community life, but instead creates conditions that foster unity, learning from each other, and helping to achieve common goals.

The next step is the change stage, which is the process of building awareness for change and ensuring program sustainability. This stage is carried out to evaluate the actions taken by North Kemodo farmers and to identify the lessons that can be learned from the program that has been followed intensively. This stage is primarily focused on building farmers' commitment to continue applying the lessons learned and to implement changes so that there is no disconnection. From here, creative ideas will emerge to build new knowledge and new commitments among them, ensuring that what has been done so far can continue to be followed up and continue to trigger change. Indicators of change are observed in the changes in aspects of community knowledge and skills, the development of social institutions formed from the results of institutional strengthening, the emergence of new infrastructure that serves as a means of change, and the existence of new policies as a result of policy advocacy to local authorities.

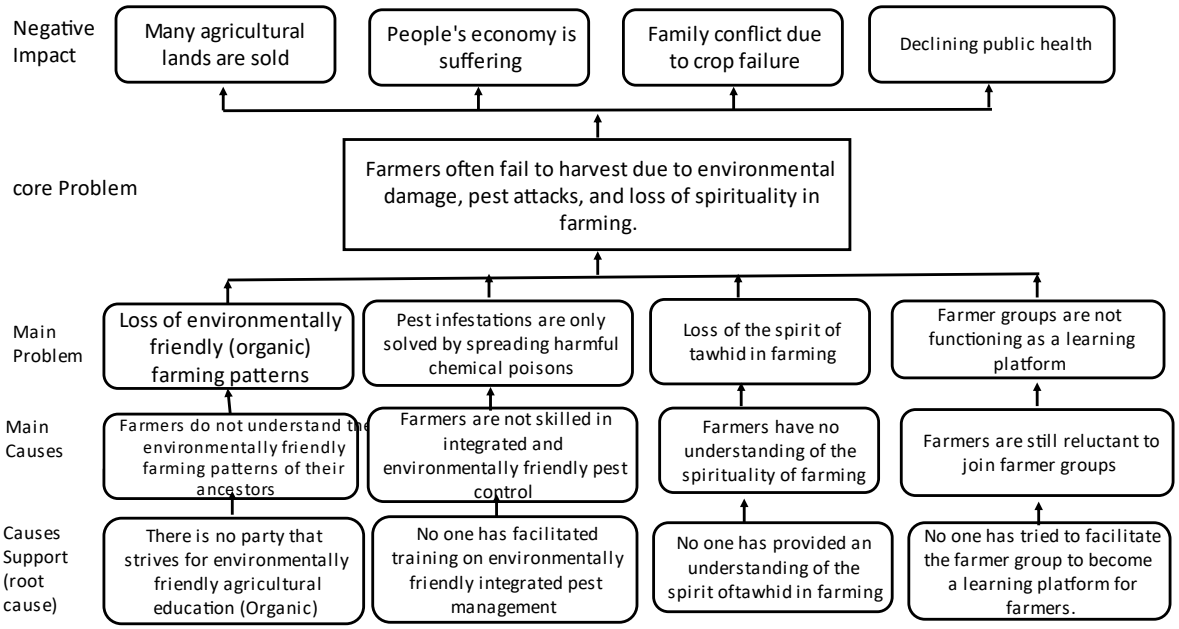
3. RESULTS AND DISCUSSION

a. Environmental Problems of Community Agriculture

From the results of joint research with the farming community of North Kemodo Hamlet, conducted through the Focus Group Discussion (FGD) process, the agricultural problems they experienced were identified. The problem is reflected in the frequent failure of farmers to harvest. The causes of crop failure, after being traced together, are environmental damage and plant pest infestations. On the other hand, the loss of peasant spirituality in cultivating crops is also a factor contributing to crop failure. Likewise, the peasant institutions that have existed so far (peasant groups) did not contribute to the peasants. Considering the four aspects of this cause, due to the conditions before environmental damage, pest infestation, and loss of agricultural spirituality, farmers experienced safe and prosperous conditions. Additionally, the existence of peasant groups that previously existed in the form of rice barns also contributed significantly. The description of the cause-and-effect analysis of this problem is depicted in the following problem tree analysis chart.

Chart 1

Tree Analysis Chart of Problems of Farmers of North Kemodo Hamlet

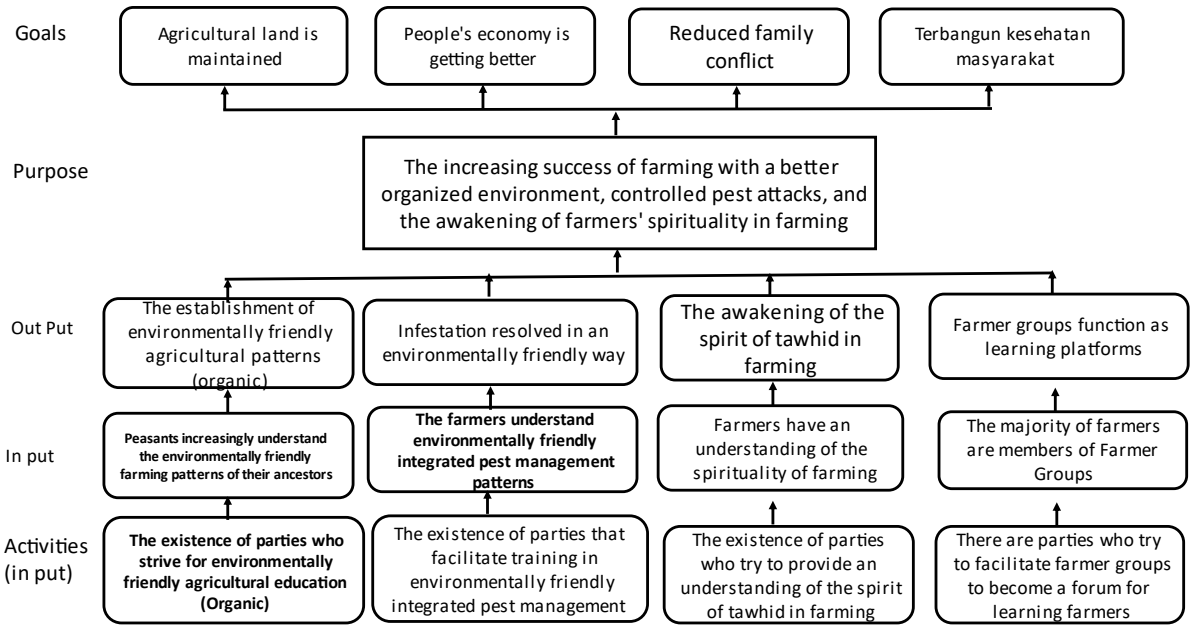


Source: Processed from FGD process with research subjects

The main problems that cause frequent crop failure are: 1) the loss of environmentally friendly (organic) farming practices, 2) pest attacks that are only resolved by spreading dangerous chemical poisons, 3) the loss of the spirit of tawhid in farming, and 4) the farmer group not functioning as a learning platform. The main problem is caused by supporting factors that are the root of the issue, namely: a) no party has sought education in environmentally friendly agriculture (organic farming), b) no party has facilitated training in environmentally friendly integrated pest control, c) no effort has been made to provide an understanding of the spirit of tawhid in farming, and d) no party has attempted to facilitate farmer groups to become a forum for learning among farmers.

From the results of the problem analysis, in FGD activities, the farming community, together with researchers, tried to analyze the expectations of change. Farmers expect changes, namely agricultural conditions that increase the success of farming. Success begins with the natural conditions of the agricultural environment improving, controlling pest attacks, awakening the spirituality of farmers in farming, and farmer groups becoming effective learning platforms for farmers. The description of the cause-and-effect analysis of these changes is illustrated in the following hope tree analysis chart.

Chart 2
Tree of Hope Analysis Chart of Change for Farmers in Kemodo Utara Hamlet



Source: Processed from the FGD process with research subjects

The hope for change is possible if: 1) the development of environmentally friendly agricultural practices (organic farming), 2) pest attacks are resolved in an environmentally friendly manner, 3) the development of the spirit of tawhid in farming, and 4) the functioning of farmer groups as a learning platform. This expectation becomes the output target that must then be carried out through a problem-solving process strategy involving: a) parties who strive for environmentally friendly agricultural education (organic), b) parties who facilitate training in environmentally friendly integrated pest control, c) parties who work to provide an understanding of the spirit of tawhid in farming, and d) parties who facilitate farmer groups to become a forum for learning among farmers.

b. Change Building Process Steps

1) Study Visit to Brenjonk Organic Farming Community

In the FGD between the North Kemodo farming community and researchers, it was agreed that in order to learn about environmentally friendly farming, it is necessary to visit farming communities that have successfully developed environmentally friendly farming models. Environmentally friendly farming is organic farming, an agricultural system that does not use harmful chemicals for fertilizer and pesticide needs that damage the environment (Yuriansyah et al., 2020). A total of 20 members of the North Kemodo farming community and researchers agreed to conduct a study visit to the organic farming community. This study visit is intended as an effort to learn firsthand about the mechanism of organic farming and its social and environmental situation.

The study visit was conducted at the Brenjonk Community, a group of organic farmers located on the slopes of Mount Penanggungan, specifically in Penanggungan Village, Trawas District, Mojokerto Regency. The Brenjonk community was chosen because, since 2015, it has successfully developed an environmentally friendly agricultural system in the village area. This community was initiated by a young man named Slamet (50 years old), who aims to develop and promote healthy and sustainable living solutions with organic products. Currently, the program area has spread across four villages, with more than 60 farmers involved in the program. The Brenjonk community tries to attract more people (farmers and community members) to engage in organic farming systems and healthy lifestyles. To date, the mainstay products of the Brenjonk community are organic food products, ranging from organic rice, forest honey, and various organic vegetables to organic local fruits and various processed foods such as chips, herbs, crackers, and other organic products.

Learning about organic farming in the Brenjok Community began with an introduction by the researcher to the director of the Brenjonk Community, Slamet (50 years old), who has been involved in organic farming for 8 years. The researcher introduced themselves and the participants from the North Kemodo Farmer Group, who aimed to learn about organic farming. Furthermore, Slamet explained the learning pattern in this community, starting with an overview of organic farming in general, followed by a field visit to the location of organic agricultural production, which included rice, vegetables, a greenhouse, a compost-making laboratory, a local microorganism breeding laboratory (MOL), and concluded with a question-and-answer session.

Guided by Heri Pribadi (40 years old), one of the organic activists, Brenjonk explored the land where organic rice is produced. The exploration included organic rice fields, vegetable gardens, compost-making areas, vegetable nurseries, and a review of the Brenjonk office. The vegetable gardens are owned by members of the Brenjonk Community around the residential area. Most of the gardens are located on either side of their houses. They look lush and attractive. Plants do not need a large area; just a few meters can suffice for thriving and producing healthy organic vegetables.

It is also interesting that some farmers who are members of the Brenjonk community have built greenhouses to grow organic vegetables of high quality, especially the types of vegetables that are in great demand by affluent people in Surabaya City. These vegetables are not found in the public market, except through orders placed with the farmers. Of course, because this is a special order, the price is also quite promising for organic vegetable farmers.

Figure 2

Green House where Brenjonk Members Grow Organic Vegetables

Source: Researcher Documentation

Next, participants were invited to the seedling nursery and compost production laboratory. Guided by Heri Pribadi, participants learned to prepare a place for seeding chili seeds and how to plant them. This was followed by a demonstration on how to make compost fertilizer from goat manure collected from the slaughter of sacrificial animals the day before. The results of the fermentation process were shown to the participants, emitting a pleasant smell typical of organic compost.

Figure 3

Practice of Organic Chili Seedling Sowing and Composting

Source: Researcher Documentation

Participants were also invited to the office where the products are managed and sold. Many participants were interested in buying mustard seeds, chilies, tomatoes, and other seeds packaged in small paper. In this office, there is also a special room measuring 2.5 x 3 meters, which is a place for developing a decomposter (one of the active ingredients of bacteria for decomposing compost). With their own decomposter products, Brenjonk farmers are already independent in providing organic materials, no longer buying from other sources, at least for the active ingredients of bacteria used in fertilizer fermentation.

By learning from the Brenjonk Organic community, North Kemodo farmers began to find new inspiration. Many creative ideas can be shared as an effort to build self-awareness of the importance of organic farming. Sofiyatin, one of the participants, said that she would plant vegetables around her house because there are many empty areas that can be used as places to grow vegetables. Ateng, another

farmer who participated in the study, also said that he would plant organic vegetables in his rice field because it is possible to grow vegetables in his field, not only rice and corn. Other participants expressed similar sentiments.

2) Compost Fertilizer Making Practice

After a learning visit to the Brenjonk Organic Farming Community in Trawas Mojokerto, members of the North Kemodo farmer group expect to immediately implement their own practices at the North Kemodo Hamlet location to produce organic compost fertilizer. They will be joined by Slamet, the initiator and a farmer from the Brenjonk Organic Farming Community, who has experience in organic farming management.

Compost fertilizer is an organic fertilizer that is effective enough to break down soil density, promote the growth of new microorganisms, reduce temperature, and improve soil health (ZF, 2022), thereby positively affecting plant growth. The materials used to make compost include animal manure, which can be from cows, buffalo, goats, or chickens. Bamboo leaves, husk charcoal or wood charcoal, silage, and decomposers (decomposing bacteria) can also be added. Decomposing bacteria can be developed from Local Microorganisms (MOL) or the EM4 activator, which is available at various agricultural material sellers (Agus et al., 2014). Effective Microorganisms (EM) is a mixed culture element that is beneficial for plant growth. EM can be applied as a starter to increase the diversity of microorganism populations in soil and plants. EM is formulated in the form of a liquid with a yellowish-brown color, a sour smell, and a pH of 3.5, containing 90% Lactobacillus sp bacteria, along with three other types of microorganisms, namely photosynthetic bacteria, Streptomyces, and yeast, that work systematically to fertilize soil and plants (Siswati et al., 2009).

Making compost begins with preparing a liquid mixture: one bucket of water (10 liters) is combined with one liter of silage and 100 ml of EM4. Next, it is mixed and stirred gently. This mixture is then used to water the fertilizer material, which consists of animal manure, bamboo leaves, and husk charcoal. The first step is to prepare the bamboo leaves, which are spread on the surface of the soil and then watered evenly with the mixture of silage and EM4. The animal manure is then placed on top of the bamboo leaves. After being evenly watered with the mixture of silage and EM4, it is covered with husk charcoal, which is also watered again with the mixture. Next, it is covered again with bamboo leaves, after being evenly watered once more with the mixture of silage and EM4, and this process is repeated up to three levels. The final step is to cover everything tightly with dark plastic. After two weeks, the lid is opened, and the fertilizer is mixed and watered evenly. It is then covered again with dark plastic. The fertilizer is left for one month, after which the plastic lid is opened and the mixture is stirred again. After this, it is closed again for another month. After two months, the fertilizer is opened and can be applied to the plants.

The composting process provided the participants of the Kemodo Utara farmer group with some insight. So far, if they fertilize with animal manure, or what they call manure, they have to wait one year to make the manure applicable to the plants. If the manure is used too soon, before one year, it usually makes the plants unhealthy and can even cause them to die. Through this fermentation process, the fertilizer can be applied within two months. Similarly, the quality of the compost is much better compared to unfermented manure.

3) Practice of Making Organic Liquid Fertilizer

The practice of making organic liquid fertilizer was carried out as a follow-up to the previous

practice. Learning to make this fertilizer is facilitated by researchers with the hope that it will be more effective and efficient. This is because the researchers have three years of experience in organic farming. Liquid organic fertilizer (POC) is a solution derived from the decay of organic matter, which comes from crop residues, agro-industrial waste, and animal waste, and contains more than one nutrient. POC material is a mixture of organic waste from fish water, coconut water, banana peels, and other materials that can be fractionated into liquid fertilizers that comply with SNI (Tanti et al., 2020). Various research trials show that POC is quite effective in improving the quality of soil fertility and plant growth (Puspadewi et al., 2016).

In making organic liquid fertilizer, the materials needed are quite simple, namely those that contain sugar, carbohydrates, protein, and other elements. These materials exist in organic waste that has been discarded, including household waste such as rice, vegetables, fruit, and other processed foods, as well as organic materials from the vegetable or fruit market. These materials are certainly quite cheap and even free (Maghfirani et al., 2024). Some of the materials prepared for the practice of making organic liquid fertilizer in a large drum of 100 liters include rotten fruit in one sack (papaya, pineapple peel, banana, or banana peel). Similarly, coconut fiber is added to increase the content of phosphorus material, and banana stumps are included for sodium material. Additionally, rice washing water or expired rice flour (1 kg), coconut water, shrimp paste (0.5 kg), salted fish (0.5 kg), silage (2 liters), brown sugar (1 kg), EM4 (500 ml), and well water (50 liters) are added.

Figure 4
Ingredients of Organic Liquid Fertilizer

Source: Researcher Documentation

Making liquid fertilizer is quite easy. First, provide a bucket to crush all the ingredients, such as fruits, vegetables, banana peels, coconut fiber, shrimp paste, and salted fish, by pounding or gently chopping. Next, melt the shrimp paste and mix it with the other liquid ingredients (silage, brown sugar, and rice flour). Then, all the ingredients that have been mixed and liquefied are put in a large drum. Stir well until it is certain that all the ingredients are evenly mixed. Then, the drum is closed tightly and placed in a cool place, away from sunlight. Every two days, open it to stir gently for a while. Make sure

that after one week, the condition of this liquid fertilizer mixture will show white fungal spots as a reaction to fermentation and will smell delicious like tape. Finally, after 20 days, the liquid fertilizer is ready to be applied to fertilize the plants.

The training participants watched and practiced making organic liquid fertilizer carefully. They became involved and proved that they could make it. According to Muslikh, the head of the farmer group, if farmers are able to independently make fertilizer like this, there will certainly be no difficulty if fertilizer is scarce. If farmers can make their own liquid fertilizer, then there is no such thing as fertilizer scarcity for them, because they can produce it themselves. Similarly, Sakur said that making liquid fertilizer was easy, not as difficult as he had heard so far. Regarding the quantity, it is not too rigid; it can be a lot or a little, the important thing is that it is balanced.

Figure 5
Practical Process of Making Organic Liquid Fertilizer

Source: Researcher Documentation

With the pattern of utilizing waste for organic liquid fertilizer, it will certainly make waste processing easier and more efficient. Uncollected organic waste will become an abundant and cheap source of organic fertilizer material. The positive impact will create a healthy environment because waste that has not been handled will be processed into organic fertilizer.

4) Practice of Making Pesticides

Pest control is one of the important factors in the success of the agricultural process. The use of synthetic chemical pesticides by farmers makes pests more resistant, and, of course, the cost of agriculture is also increasingly expensive. Likewise, it also impacts environmental degradation and health quality (Sinambela et al., 2024). In an effort to raise awareness of the importance of the agricultural management process with environmentally friendly practices, researchers invite members of the Kemodo Utara farmer group to learn together again about the declining reality of agriculture. In

the previous FGD process, researchers and the community agreed to collaborate in creating more environmentally friendly pesticides, namely vegetable pesticides.

A vegetable pesticide is a pesticide whose basic ingredients come from plants or nature. The way this type of pesticide works is by mixing various active ingredients or compounds contained in plants (Amir & Wiyatiningsih, 2023). This pesticide is also easy to manufacture and is certainly safer for humans and the environment (Putra, 2024). This vegetable pesticide training activity is conducted at training sessions led directly by researchers, who also have experience in the manufacture of this natural pesticide. Together with the members of the farmer group the researcher prepares the materials to be used in the training. Materials are prepared in a piecemeal fashion and divide the tasks between each other. These materials include: Neem Leaf (2 handfuls), Jatropha leaves (10 sheets), Soursop leaf (20 sheets), Garlic (7 cloves), Turmeric (1 piece), Lemongrass (1 piece), and Tobacco (1 onz).

The above ingredients are derived from several types of plants that contain antioxidants that are highly disliked by pests. Neem leaves contain azadirachtin and salanin, which can inhibit insect metamorphosis, preventing insects from laying eggs. Some other ingredients contain compounds that can reduce insect appetite. Tobacco contains nicotine, which can damage insect nerves and cause them to die. The smell of tobacco can also make insects reluctant to approach (Wulansari et al., 2022).

Figur 6
Forms of plant-based pesticide ingredients

Source: Researcher Documentation

Practicing the method of making vegetable pesticides, Muadi and Sakur finely chopped all the ingredients with a knife, except for the tobacco and lemongrass. While waiting for the preparation of the ingredients, Wahyudi boiled the tobacco and lemongrass in water. The tobacco and lemongrass were boiled until they reached a boil, then cooled and filtered. Next, the ingredients that had been chopped into small pieces were placed in a blender to be blended smoothly.

Figure 7
Shredding of plant-based pesticide ingredients

Source: Researcher Documentation

After all the ingredients have been chopped, water is added to approximately half of the blender's capacity and then blended by Muadi. If there is no blender, you can also mash the ingredients. This pulverization is done so that the juice in the leaves and ingredients can be released. The mixture of plant juices will be used as a vegetable pesticide. After the ingredients are blended, they are then placed into a container or bucket and mixed with tobacco and lemongrass cooking water. This process is carried out by Muadi (36). The ingredients are then stirred until evenly distributed and are ready to be put into jerry cans or bottles for extraction. Extraction is done by letting the material sit for two days. After two days, the vegetable pesticide is ready for use. If the vegetable pesticide is desired to last longer, simply add a solution of cukak acid. Then the vegetable pesticide can last a maximum of up to one month.

Figure 8
Nab Pesticide Extraction Results ati

Source: Researcher Documentation

After two days of extraction, the vegetable pesticide in the bottle is opened. The vegetable pesticide in the bottle is then filtered first to separate the extract liquid from the pulp. This filtering is also intended to prevent the dregs from clogging the sprayer and causing damage to the equipment. When spraying, farmers should also wear masks because the smell is no less pungent than that of synthetic pesticides. The vegetable pesticides made by researchers with the community have an odor similar to that of rotten organic liquid and are very pungent. After the filtering process, the vegetable

pesticide is immediately sprayed and applied directly to the chili plants. Vegetable pesticides can be used to control pests or prevent pests from approaching the plants.

Figure 9
Application of plant-based pesticides on crops

Source: Researcher Documentation

The rate of application of this vegetable pesticide involves mixing ½ liter of vegetable pesticide with 10 liters of water. The vegetable pesticide was first added to the tank by Muadi (36), and then 10 liters of water were added. Before spraying, the tank is shaken to ensure that the mixture is evenly distributed, and then the vegetable pesticide is ready to be sprayed on the plants. This spraying process is carried out in the morning. However, for maximum results, the spraying process should be done in the afternoon when many pests are out looking for food. This spraying is best done regularly every 5 to 7 days to provide maximum effect and results (Hendra et al., 2020).

5) Land Preparation Practice

Equally important in planting is how farmers treat their land after harvest. The performance of the land during the planting process certainly drains a lot of nutrients from the soil, so it is very necessary to make efforts to restore soil productivity. One way to do this is by loosening the soil and improving the soil microbial development medium (Wicaksono et al., 2022).

At this stage, researchers, together with farmer groups, carried out several activities that support the implementation of organic farming systems. If farmers usually clean up agricultural residues by burning them on the land, then in an environmentally friendly agricultural process, this should not be done. As in the previous learning process, Heri Pribadi from the Brenjonk Organic Farming Community explained that agricultural residues should be returned to the soil as much as possible by plowing. They can also be taken home for animal feed. If both possibilities are difficult, then the burning process must be carried out in a specific place designated for burning agricultural residues. Random burning of land is not allowed because it will kill the microbes in the soil.

The next process is to loosen the soil to open the soil pores. Farmers usually perform this activity by plowing their fields. After plowing or hoeing, EM4 liquid is sprayed to add decomposing microbes to the soil. The application of EM4 liquid is done at least a week before the planting process, when the soil is at rest, so that during the period from harvesting to planting, the decomposing microbes are already working in the soil. EM4 is mixed with brown sugar liquid, and then it can be sprayed directly on the soil that has been hoed or loosened (Anam & Regar, 2022).

Figure 10
Addition of EM4 liquid to post-harvest land

Source: Researcher Documentation

The photo above shows the process of applying post-harvest land treatment by adding decomposing microbes to the soil. EM4 liquid is used to introduce decomposing microbes into the soil. The activity was carried out on Muadi's land (36), which had just finished harvesting corn. The EM4 spraying process is conducted a week before the planting process. This method is also very effective when planting rice because the soil conditions are very moist and loose. Decomposing microbes will quickly multiply in wet soil conditions, allowing organic materials to decompose immediately and increase the level of soil fertility (Qamar, 2018).

6) Agriculture *Tawhid* Recitation

The agricultural *tawhid* recitation activity is intended as an effort to restore the belief that planting is worship. Farming is a noble job that is favored by Allah and Rasulullah Saw (Yudistira, 2021). Essentially, farmers already have the belief that all who give life and take it away is Allah. However, in practice, they often think pragmatically, leading them to believe that what brings life is fertilizer and water, and what kills is poison and pesticides. If the plant is not fertilized and does not receive water, it will die. This is what members of the North Kemodo farmer group stated. Therefore, to grow and fertilize, fertilizers and water must be provided in sufficient amounts. Similarly, the success in controlling pests is also viewed pragmatically; what can kill and repel pests is poison, so everything must be treated with poison to ensure the pests die. The belief in the success of cultivating the land to be fertile, with plants thriving and abundant harvests, is the result of the maximum management efforts of farmers. Such views are generally not wrong, but they rely on the practical aspects of the business, without any belief that arises from their nature as Muslims. As Muslims who believe that Allah creates and gives life, the belief in *tawhid* should emerge. When a Muslim cultivates crops, in addition to making efforts by fertilizing plants and maintaining them, he must also rely on the belief in tawhid (Anwar et al., 2023). From this perspective, they can be said to be uprooted from the roots of tawhid in terms of farming.

Figure 11
Agriculture *Tawhid* Recitation

Source: Researcher Documentation

The discussion on the spirituality of agriculture began with the farmers' complaints about the rat infestation problem. As Muadi (one of the farmer group members) said, rats are difficult to eradicate. In his experience, if rats are poisoned, they become more rampant. Today he spread rat poison; the next day he found several dead rats in his rice fields, but the day after tomorrow, the rats will come again in large numbers and destroy the crops. "Rats are running amok," Muadi said. He suspects that the rats are herded, so if they are killed, more rats will be brought in. This claim was also confirmed by the farmer group members present at the discussion.

From the experience of handling these rats, what farmers forget is that rats are God's creatures too. The one who gives life to them is Allah SWT. Thus, the one who kills or drives them away should also be Allah SWT. Therefore, to repel rats, the approach is to use spiritual means. Prayers ask Allah to keep the rats away from the farmers' crops. This method has actually been applied by many kyais and farmers in the past. Only farmers now think more logically but forget tawhid (Hifni Septina Carolina et al., 2023).

The researcher's experience when conducting organic farming trials for peanut crops in 2021 was challenging. Almost all the plants in the rice fields at that time were attacked by rats, including the researcher's peanuts. Even Purnadi's rice field, located on the west side of the researcher's land, had its corn crop severely damaged by rats. The corn, which was only in one plot, had been devoured by rats since it started to fill out. Eventually, none of the corn could be harvested. Purnadi finally cleared the corn plants, hoping that the researcher's field, which was planting peanuts and about to be harvested, would also be attacked by rats. The researcher knew that the attack had started on the bean plants. The researcher finally came to the field, circled around it while reciting the Prophet's *salawat* and also engaged in dialogue with the rats that were eating the peanuts. When a rat was eating peanuts and running away, the researcher hurriedly greeted it: "Hey mouse, you can eat these peanuts, but not too many. It costs a lot to grow peanuts. Please don't finish them, so I can give alms and help the poor." Thanks to the method practiced by this researcher, the peanuts were ultimately not attacked. The peanuts were also harvested well, and the crop, according to the middlemen, was very good. The beans were full, and the fruit was dense.

This experience can be tried by anyone, as long as they have good and right intentions for the

sake of Allah SWT. God willing, it will be granted. This means asking that the crops not be attacked and committing to charity if the harvest is successful. We ask Allah and also address the rats that have attacked the crops. The participants in the tawhid recitation from the farmer group members also wondered how it could be like that. The researcher's answer is, of course, it can happen because we do it seriously and carry it out for the sake of Allah SWT. That Allah keeps us safe is certainly due to our efforts to ask Him for safety, and we also strive to be safe. Similarly, in planting, we should intend to plant for the sake of Allah. We should intend to farm for the sake of Allah to provide food for humans and other creatures of Allah. Of course, with the intention for the sake of Allah, whatever conditions we are working under should rely on Allah SWT, not solely on fertilizers, pesticides, and other efforts as if they were guaranteed to succeed.

There was a question from a participant in the agricultural *tawhid* recitation: what if we have intended and prayed to Allah, but the rice fields still fail to yield a harvest? Even though we have also tried to fertilize and use pesticides, the researcher replied that the intention was right, the prayer was right, but the belief was doubtful. Effort and surrender must be balanced. Planting with all the efforts of land cultivation, healthy fertilization, and the use of non-toxic vegetable pesticides, we must then set our hearts on the fact that all the success of our plants comes only from Allah Swt, who grows, produces, and provides (Ikhtiono et al., 2020). We must return to Him, acknowledging that all the success of our agriculture is not solely due to our efforts, but is granted by His permission and pleasure. Our efforts with fertilization and other practices are merely wasilah (media), which must be fulfilled because Allah's commandments also instruct the use of wasilah. However, we should not make wasilah everything. Wasilah can lead to success or failure, and we must return all of that to the One who is almighty over everything in this world. Thus, our agriculture will be secure, meaning our beliefs (tawhid) will be safe, our plants will be safe, and of course, lives will be saved (Ikhtiono et al., 2020).

c. Discussion

The condition of agriculture and the environment in Indonesia is currently experiencing a tremendous decline. The rate of forest destruction reaches 1,315,000 hectares per year, or one percent of forest destruction annually. NGOs from various environmental organizations have revealed that Indonesia's forest destruction amounts to 1,600,000 to 2,000,000 hectares per year. Greenpeace states that forest destruction in Indonesia reaches 3,800,000 hectares per year. Meanwhile, Indonesian forestry experts claim that forest destruction in Indonesia totals 1,080,000 hectares per year (Austin et al., 2019).

The damage to agricultural land in Indonesia is already very worrying (Sitorus & Pravitasari, 2017). The use of fertilizers and pesticides has increased from year to year since the green revolution in the 1970s. The entry of technology in the form of fertilizers and pesticides into modern agricultural systems, if applied excessively, has the potential to cause environmental damage. The impacts include soil and water contamination, pests becoming more resistant, reduced quality of agricultural products, and endangerment to humans and other living beings (Tsion & Steven, 2019). Most agricultural land pollution comes from agrochemicals. This is due to farmers' demands for increased production, leading to uncontrolled use of agrochemicals. Without realizing it, this results in the emergence of several problems, including heavy metal content in agrochemicals, nitrate pollution in water, and pesticide residues on agricultural land (Tadesse & Kasa, 2017).

During the 1960s and 1970s, the Green Revolution was mainly aimed at changing the economic behavior patterns of farmers. Boeke called it social dualism (Boeke, 1953). Geertz referred to it as agricultural involution based on the behavior of shared poverty (Geertz, 1963). Penny described it as

peasant subsistence-mindedness (Singarimbun & Penny, 1973). It is evident that the Green Revolution has brought about fundamental changes in farmers' relationships with other farmers, nature, technology, government, and large corporations (both local and foreign). Agricultural production, especially rice, has indeed been boosted. However, all of this came at the cost of environmental degradation.

The Green Revolution in agriculture requires the use of excessive water, chemical fertilizers, and chemical pesticides, which were previously sufficient through traditional and nature-based technologies. Uncontrolled chemical intake and monoculture cropping patterns have caused environmental damage and pollution, the decline of natural pest predators, and the impoverishment of biodiversity, especially the transfer of local seeds from the hands of farmers to international corporations. Research conducted by the IPM (Integrated Pest Management) team from FAO in 1992-1995 found 306 (40%) predators, 187 (24%) species of parasitoids, 145 (18.95%) species of detritivores and plankton eaters, and 127 (16.6%) species of herbivores in Javanese rice fields (Tata, 2020). It is not realized that all these animals have provided protection for farmers' crops. However, the intensive use of pesticides has opened a Pandora's box of weaknesses in IRRI-produced superior varieties that are vulnerable to pests when compared to local varieties.

Many studies have shown that seed uniformity in superior varieties and green revolution technology packages has led to the erosion (read: extinction) of biodiversity along with local knowledge and wisdom, which includes cropping patterns, tillage, pest control, and crop timing of various local (non-rice) crops, thus bringing about shocks to village food stocks (insecurity at the farm level). Finally, food security in Indonesia and other developing countries tends to be vulnerable. The sustainability of production can only be maintained with the continuous intake of chemicals in the form of pesticides, fertilizers, and seeds whose supply is controlled by a handful of Transnational Corporations (TNCs). However, the continuous intake of chemicals causes environmental damage, arid land, and the prolonged death of predators, as well as damage to biodiversity.

Similarly, many studies show that biodiversity and local knowledge about the utilization of biological resources are two pillars of food security. Indeed, food security should not be placed on a market that is very vulnerable but should rest on the shoulders and capacities of the community itself. The two elements of biodiversity and local knowledge have been proven over the years to guarantee the sustainability of local people's lives. An example of both is the Balinese people preserving dozens of species of salak fruit with a variety of flavors. In the forests of the Banten region, the people of Baduy know the healing properties contained in various herbs. In the forests of Sumatra, there are wild tigers that are not hostile but rather revered as “anyik” (opa) by inland forest farmers (McKay et al., 2018). Dayak peoples have preserved local rice varieties, reaching up to 95 varieties of rice, spread across Apo Kayan (25 varieties), Pujungan (58 varieties), and Krayan (37 varieties). Such rice varieties are grown not only for consumption but for the renewal of the seedlings. The rice is lovingly cared for like a child of its own (Semiarto & Shinto, 2018).

Given the condition of food production and the environment, the efforts that need to be built systematically are to restore biodiversity and local knowledge that have been proven to create food security. Learning from the experiences of ancestors and local wisdom that still survive in various communities, the effort to restore it can still be made, as long as there is willingness and perseverance. Similarly, in creating a healthy environment, empowerment needs to be done on a micro scale, so that it will create a balanced and sustainable environment that impacts the macro condition of the environment (Rahmawati et al., 2023).

Efforts to empower farmers in a small hamlet in Kemodo Utara, Dukuhmojo Village, Mojoagung Sub-district, Jombang Regency, are part of the researcher's concern for restoring biodiversity and food security. Serious and sustainable efforts are needed to restore environmental conditions from systematic damage. Through the process of learning in simple ways within a small scope, it is hoped that farmers' awareness will be aroused, encouraging them to change their farming practices. By learning to understand the problems, systematizing the patterns of issues that occur, and tracing the roots, followed by simple practices of environmentally friendly farming, farmers begin to change. They are shifting from pragmatic patterns to more idealistic, spiritual, and consistent approaches, allowing them to better appreciate the meaning of food sovereignty and environmental sustainability.

Basically, the environment is not just an object that can be exploited, but a mandate that must be preserved because it is part of God's creation that must be respected, maintained, and preserved in accordance with His will. One way to carry out the mandate of preservation is by planting (Roy Purwanto et al., 2022). Planting trees or any plants is not just about preserving plants, but is part of planting goodness and giving alms. Planting, in the context of Islamic teachings, is a charity that has a deep theological dimension. The act of planting trees connects charity with the principles of goodness and care for the environment (Azwar et al., 2022). This reflects the understanding that any positive action that benefits mankind and nature, even after a person dies, can become a *jariyah* charity (charity that continues to flow its rewards). Planting trees or engaging in activities related to the sustainability of nature has an important spiritual dimension in the Islamic view (Sari et al., 2024).

Sadaqah in Islam is a gift or charity done with the aim of gaining the pleasure of Allah SWT and helping others. *Sadaqah* is not only limited to money or wealth but also includes various other forms of charity, such as feeding the hungry, providing useful knowledge, and even smiling at others. Almsgiving can also be an act that brings benefits to society and nature, including planting trees (Agiel et al., 2023). The Bukhari and Muslim hadith that is often associated with the concept of planting as alms is: "If a Muslim plants a tree or grain, and it is eaten by a bird, human, or animal, it becomes charity for him" (Nawaz & Moeen ud Din Hashmi, 2020). This Hadith illustrates that planting trees is a charity that has direct benefits for other living beings, whether humans, animals, or birds. This action will bring rewards that continue to flow as long as the tree provides benefits.

Theologically, planting trees or engaging in activities that contribute to the preservation of nature is understood as *amal jariyah*, which is a charity whose rewards continue to flow even after the person who performed the deed has passed away. The Qur'an explains: "*The example of one who spends his wealth in the way of Allah is like a man who planted one seed which grew into seven stalks, in each stalk a hundred seeds*." (QS. al-Baqarah: 261). Although this verse discusses charity in general, the principle also applies to any good deed done with the intention of earning Allah's pleasure, including planting trees. Every tree that grows and provides benefits, whether for humans, animals, or the environment, will be a source of reward for the planter.

Islam highly values the environment and views it as a trust from Allah SWT that must be maintained and preserved. Planting trees or other vegetation not only provides economic or aesthetic benefits but also helps maintain the balance of the ecosystem, filters the air, reduces pollution, and prevents soil erosion. All of these benefits reflect the human obligation to take care of Allah's creation, which is also part of worship (Heba Hasan, 2022).

In Islam, acts of kindness that bring sustainable benefits are highly valued. Planting a tree is one such act that provides long-term benefits. Even after the person who planted the tree dies, the tree continues to provide benefits, whether in the form of oxygen, food, or shelter for various living beings.

This is a form of charity that continues to yield rewards. For example, if a person plants a tree in a strategic place, such as near a water source or on arid land, the benefits can last for centuries, benefiting many generations to come (Mangka et al., 2022).

Planting trees or providing other natural resources through agriculture or gardens not only benefits humans but also animals and other plants. In the Islamic view, benefiting other living beings is a noble form of charity. This is based on the principle that every living creature is a creation of Allah and has the right to a share of the sustenance that exists on this earth. Planting fruit-bearing trees or providing shelter is also a form of compassion for other living beings (Nawaz & Moeen ud Din Hashmi, 2020). As caliphs on earth, humans are given the task of caring for the earth and everything in it. Therefore, planting trees is part of the human obligation to preserve nature and natural resources. This reflects the moral and spiritual responsibility of humans to care for God's creation, which includes preserving plants and forests. Planting trees can be considered an act of maintaining harmony between humans and nature, as well as a form of obedience to God's command to protect the earth and all that is in it.

In the perspective of environmental theology, the concepts of *tawhid*, such as *Tawhid Uluhiyah*, *Tawhid Ubudiyah*, and *Tawhid Rubbubiyah*, have great relevance in building human relationships with the universe and the environment. These concepts provide a theological basis for understanding the role of humans as creatures mandated to preserve the environment as part of worship and recognition of God's power, SWT, who deserves to be worshipped and served. In the context of *Tawhid Uluhiyah*, humans should not worship anyone other than Allah, in any form, and all forms of worship must be directed only to Him. In relation to the environment, this concept teaches that humans must respect and protect nature as a form of respect for God, who created the universe (Roy Purwanto et al., 2022).

The implication for the environment is that believers must respect nature as God's creation, which is part of His oneness, because this nature is a sign of His power that must be preserved and appreciated. In this context, damaging the environment means not only damaging creation but also violating God's rights as the Creator and Sustainer of the universe. Humans, as caliphs on earth, are obliged to maintain the balance of nature as proof of worship to Him (Fata, 2015).

In the context of *Tawhid Ubudiyah*, refers to the recognition that all forms of servitude are reserved only for Allah SWT. This means that humans must serve Allah in all aspects of life, including the way they interact with nature and the environment. This concept emphasizes that all human actions, both in worship and in daily life, must be directed towards fulfilling the will of Allah (Alibe, 2022).

In the context of Tawhid Rubbubiyah, there is the recognition that Allah SWT is the Lord who regulates, maintains, and animates the entire universe. In this context, Allah is the absolute ruler who creates and maintains all His creations, including nature and life within it. Humans are faced with the task of maintaining and caring for this creation of Allah in accordance with His will (Alibe, 2022).

The implication for believers related to the environment is that believing in Allah with *Tawhid Rubbubiyah* reminds us that Allah, as the caretaker of the universe, has established a very organized and balanced natural system (al-Qur'an Surat al-Furqan: 2, and al-Qamar: 49). Likewise, Allah created nature seriously, not playfully (al-Qur'an Surat al-Anbiya: 16, al-Ankabut: 44, al-Ahqaf: 3). Therefore, humans, as caliphs on earth, must maintain the balance and sustainability of nature to prevent any damage. In carrying out their duties as caretakers, humans must protect nature and natural resources with full responsibility, avoid damage, and manage nature in accordance with the rules set by Allah. Environmental damage caused by excessive exploitation or neglect of the principle of balance is a form of incompatibility with the principle of *Tawhid Rubbubiyah* (Heba Hasan, 2022).

This understanding is not enough for Muslims to comprehend; it must become part of their behavior. Protecting nature, starting with the simplest actions, such as picking plants for consumption or disposing of food scraps, needs to be considered carefully. Is this action part of an effort to protect the environment or to damage it? The attitude of believers will certainly reflect on this action seriously.

Efforts to protect the environment cannot be accomplished by a handful of people alone, given the breadth of environmental and food issues; this small group cannot make a significant impact. Therefore, systematic efforts must be mobilized by various groups, including academics, government, non-governmental organizations, environmental activists, and even politicians, to urgently promote the movement to save the environment and restore biodiversity, so that the balance of nature can be restored.

4. CONCLUSION

Efforts to build environmentally friendly agriculture need to be carried out with a systematic approach. It requires a collaborative pattern by fostering awareness of Tawhid, which views planting as a form of faith in Allah. Furthermore, this faith is implemented through learning efforts. Learning begins with environmentally friendly agriculture through organic farming trials. These trials involve analyzing agricultural conditions, examining the seasonal calendar, assessing power relations, and planning for environmentally friendly agriculture. Additionally, collaboration with other organic farming communities is essential, including practicing the creation of compost, liquid organic fertilizer, vegetable pesticides, and land processing. Similarly, efforts to strengthen the faith of Tawhid agriculture must be continuously pursued to enhance the spiritual dimension of farming. Organizing farmers in Kemodo Utara Hamlet to build environmentally friendly agriculture helps raise awareness of the importance of protecting the environment by reducing the use of chemicals and replacing them with natural materials, as well as developing the ability to practice environmentally friendly agriculture. This awareness is rooted in the belief that planting is an act of worship and a noble endeavor to provide.

REFERENCES

Afandi, A., Fauziyah, N., Wigati, S., & Sucipto, M. H. (2017). *Modul Riset Transformatif*. Dwi Putra Pustaka Jaya.

Agiel, M. T., Putra, A. P., Mustofa, A., Yanti, A. D., & Ajjahidi, M. H. (2023). The Dynamics of Inheritance in Various Modern Muslim Countries. *Al Mashaadir : Jurnal Ilmu Syariah*, *4*(1), 1–11. https://doi.org/10.52029/jis.v4i1.100

Agus, C., Faridah, E., Wulandari, D., & Purwanto, H. (2014). PERAN MIKROBA STARTER DALAM DEKOMPOSISI KOTORAN TERNAK DAN PERBAIKAN KUALITAS PUPUK KANDANG (The Role of Microbial Starter in Animal Dung Decomposition and Manure Quality Improvement) Fakultas Kehutanan UGM , Jalan Agro Bulaksumur Yogyakarta 55281 KP4 U. *Jurnal Manusia Dan Lingkungan*, *21*(2), 179–187.

Alibe, M. T. (2022). Tauhid Dan Dalil Wujud Tuhan Pendekatan Dalil Naqli & Aqli. *LISAN AL-HAL: Jurnal Pengembangan Pemikiran Dan Kebudayaan*, *16*(1), 16–26. https://doi.org/10.35316/lisanalhal.v16i1.16-26

Almirzanah, S. (2020). God, humanity and nature: Cosmology in islamic spirituality. *HTS Teologiese Studies / Theological Studies*, *76*(1), 1–10. https://doi.org/10.4102/hts.v76i1.6130

Amir, F., & Wiyatiningsih, S. (2023). *The Utilisation of Botanical Pesticide as Pest Control in The Management of Organic Vegetable Farming*. *2023*(2020), 71–75. https://doi.org/10.11594/nstp.2023.3115

Anam, M. S., & Regar, A. F. C. (2022). Pengaruh Penambahan Kotoran Kambing dan EM4 terhadap Kualitas Pupuk Kompos Limbah Jerami Padi dan Pemanfatannya terhadap Pertumbuhan Tanaman Bayam (Amaranthus sp.). *Berkala Ilmiah Pertanian*, *5*(2), 99. https://doi.org/10.19184/bip.v5i2.28977

Anwar, A., Yasin, A., Yusra, N., Mujtahid, I. M., & Hardila, D. (2023). TAWHID: As a Basis for Science Development. *Journal of Natural Science and Integration*, *6*(2), 196. https://doi.org/10.24014/jnsi.v6i2.21862

Austin, K. G., Schwantes, A., Gu, Y., & Kasibhatla, P. S. (2019). What causes deforestation in Indonesia? *Environmental Research Letters*, *14*(2). https://doi.org/10.1088/1748-9326/aaf6db

Azwar, A., Abur Hamdi Usman, & Mohd Farid Ravi Abdullah. (2022). Preserving the Earth: Perspectives on Prophetic Hadiths. *Hadis*, *12*(24), 62–71. https://doi.org/10.53840/hadis.v13i24.204

Baharuddin, R., Elinur, E., & Ernita, E. (2023). Empowerment of Women Farmer Groups at East Sidomulyo sub-district in The Use of Household organic Waste as Organic Fertilizer with Composter. *Dinamisia : Jurnal Pengabdian Kepada Masyarakat*, *7*(2), 457–462. https://doi.org/10.31849/dinamisia.v7i2.12593

Boeke, J. (1953). *Economics and Economic policy of dual societies as Exemplified by Indonesia*. Institute of Pasific Realtions.

Farid, M., & Saputra, D. (2021). Media, Consumerism and the Environment: The Relationship of Media and Consumptive Behavior of Urban Society to Environmental Damage. *MUHARRIK: Jurnal Dakwah Dan Sosial*, *4*(02), 255–266. https://doi.org/10.37680/muharrik.v4i02.1011

Fata, A. K. (2015). Teologi Lingkungan Hidup Dalam Perspektif Islam. *ULUL ALBAB Jurnal Studi Islam*, *15*(2), 131. https://doi.org/10.18860/ua.v15i2.2666

Fatchan, A., & Soekamto, M. H. (2015). Defections "Kiai","Santri" and Farmers in the New Order and Reform Order in the Islamic Tradition in Rural East Java. *Res. Humanities Soc. Sci*, *5*(10), 50–60. https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=efdf47fb0598a30c04b8eec6994d42b4567ec47c

Gaina, C. D., Amalo, F. A., Sanam, M. U. E., Datta, F. U., Benu, I., Tophianong, T. C., & Simarmata, Y. T. R. M. R. (2021). Farmers' empowerment through managing organic waste as fertilizer in Camplong II Village, Kupang Regency, NTT. *BIO Web of Conferences*, *33*(November 2020), 4–7. https://doi.org/10.1051/bioconf/20213305002

Gaur, V. S., Channappa, G., Chakraborti, M., Sharma, T. R., & Mondal, T. K. (2021). "Green revolution" dwarf gene sd1 of rice has gigantic impact. *Briefings in Functional Genomics*, *19*(5), 390–409. https://doi.org/10.1093/bfgp/elaa019

Geertz, C. (1963). *Agricultural involution: The processes of ecological change in Indonesia*. Univ of California Press.

Heba Hasan. (2022). Islam and Ecological Sustainability: An Exploration into Prophet's Perspective on Environment. *Social Science Journal for Advanced Research*, *2*(6), 15–21. https://doi.org/10.54741/ssjar.2.6.4

Hendra, Sarbino, & Syahputra, E. (2020). Pengaruh frekuensi penyemprotan insektisida profenofos untuk mengendalikan lalat buah bactrocera spp pada tanaman Cabai. *Jurnal Ilmiah Fakulta Pertanian. Universitas Tanjungpura: Pontianak*, *1*(7), 1–12. https://jurnal.untan.ac.id/index.php/jspp/article/view/43865%0Ahttps://jurnal.untan.ac.id/index.php/jspp/article/viewFile/43865/pdf

Hifni Septina Carolina, Khodijah, & Suhono. (2023). Training on Microgreen Cultivation as a Strategy

to Strengthen Food Security and Family Nutrition. *International Journal of Community Engagement Payungi*, *3*(2), 54–61. https://doi.org/10.58879/ijcep.v3i2.39

Hikmawati, H. (2021). Agricultural Land, Pesticides and Habitus of Muslim Farmers in Ngawi Regency. *MUHARRIK: Jurnal Dakwah Dan Sosial*, *4*(02), 219–236. https://doi.org/10.37680/muharrik.v4i02.975

Ikhtiono, G., Bahagia, B., Wibowo, R., & Mangunjaya, F. M. (2020). Land Conservation and Pest Management of Agriculture Perspective Islamic Religion. *SALAM: Jurnal Sosial Dan Budaya Syar-I*, *7*(11), 977–992. https://doi.org/10.15408/sjsbs.v7i11.17776

Irawan, I. (2017). Ekologi Spiritual: Solusi Krisis Lingkungan. *Scientia: Jurnal Hasil Penelitian*, *2*(1), 1–21. https://doi.org/10.32923/sci.v3i2.945

Maghfirani, N. N., Novitrie, N. A., Setiani, V., & Lesmana, I. (2024). *Analisis Variasi Bahan terhadap Kualitas Pupuk Organik Cair (POC) Dari Sisa Makanan Analysis of Material Variations to Fertilizer Organic Liquid From Food Waste*. *6*(2), 81–90.

Mangka, A., Amrah Husma, & Jahada Mangka. (2022). Pelestarian Lingkungan Hidup dalam Pandangan Syariat Islam. *BUSTANUL FUQAHA: Jurnal Bidang Hukum Islam*, *3*(2), 205–221. https://doi.org/10.36701/bustanul.v3i2.613

McKay, J. E., St John, F. A. V., Harihar, A., Martyr, D., Leader-Williams, N., Milliyanawati, B., Agustin, I., Anggriawan, Y., Karlina, Kartika, E., Mangunjaya, F., Struebig, M. J., & Linkie, M. (2018). Tolerating tigers: Gaining local and spiritual perspectives on human-tiger interactions in Sumatra through rural community interviews. *PLoS ONE*, *13*(11). https://doi.org/10.1371/journal.pone.0201447

Nawaz, S., & Moeen ud Din Hashmi, S. (2020). Conservation of Plants and Trees in the Light of Prophetic Teachings. *Journal of Islamic and Religious Studies*, *5*(1), 65–84. https://doi.org/10.36476/jirs.5:1.06.2020.16

Puspadewi, S., Sutari, W., & Kusumiyati, K. (2016). Pengaruh konsentrasi pupuk organik cair (POC) dan dosis pupuk N, P, K terhadap pertumbuhan dan hasil tanaman jagung manis (Zea mays L. var Rugosa Bonaf) kultivar talenta. *Kultivasi*, *15*(3), 208–216. https://doi.org/10.24198/kultivasi.v15i3.11764

Putra, R. M. (2024). Socialization Of Bio-Pesticide Making From Cigarette Butts Waste. *Jurnal Wicara Desa*, *2*(April), 120–126.

Qamar, S. U. R. (2018). An Overview on Microorganisms Contribute in Increasing Soil Fertility. *Biomedical Journal of Scientific & Technical Research*, *2*(1), 2131–2132. https://doi.org/10.26717/bjstr.2017.01.000641

Rahmawati, D. E., Kumalasari, A., & Kasiami, S. (2023). *Green Empowerment : Strengthening Health Cadres through Family Medicinal Plants in Rural Communities*. *6*(1), 162–173. https://doi.org/10.37680/muharrik.v6i1.4099

Riggio, G. M., Wang, Q., Kniel, K. E., & Gibson, K. E. (2019). Microgreens—A review of food safety considerations along the farm to fork continuum. *International Journal of Food Microbiology*, *290*, 76–85. https://doi.org/10.1016/j.ijfoodmicro.2018.09.027

Roy Purwanto, M., Istiani, M., Hilda, H., Marazi, H., & Nudin, B. (2022). Islamic View Towards Environment Preservation. *KnE Social Sciences*, *2022*, 11–15. https://doi.org/10.18502/kss.v7i10.11336

Sari, I., Karantina, W. O. Y., Lasni, Pratiwi, A., & Arifin, S. R. (2024). Environmental Ethics Relevance in Theology Perspective: An overview from Islamic, Christian, Hindu, Buddhist, and Confucian. *Journal of Geographical Sciences and Education*, *2*(3), 110–116.

https://doi.org/10.69606/geography.v2i3.106

Savci, S. (2012). Investigation of Effect of Chemical Fertilizers on Environment. *APCBEE Procedia*, *1*(January), 287–292. https://doi.org/10.1016/j.apcbee.2012.03.047

Semiarto, P., & Shinto, S. (2018). Questioning the Development: The Maintenance of Local Variety of Rice in the Changing Dayak Community of Central Kalimantan, Indonesia. *… Conference on Issues in Social and …*, *161*(Iciser 2017), 22–26. https://www.atlantis-press.com/proceedings/iciser-17/55910559

Shiva, V. (2000). *Bioteknologi dan Lingkungan dalam Perspektif Hubungan Utara-Selatan*. PT. Gramedia Pustaka Utama.

Sinambela, B. R., Hidup, L., Pertanian, F., Hkbp, U., & Medan, N. (2024). DAMPAK PENGGUNAAN PESTISIDA DALAM KEGIATAN PERTANIAN TERHADAP LINGKUNGAN HIDUP DAN KESEHATAN The Impact of Pesticide Use in Agricultural Activities on The Environment and Health Bilker Roensis Sinambela. *Jurnal Agrotek*, *8*(2), 178–187.

Singarimbun, M., & Penny, D. (1973). *Population and Poverty in Rural Java: Some Economic Arithmetic from Sriharjo*. *May*.

Siswati, N. D., Theodorus, H., & Eko S, P. W. (2009). Kajian Penambahan Effective Microorganisms (EM4) pada Proses Dekomposisi Limbah Padat Industri Kertas. *Buana Sains*, *9*(1), 63–68.

Sitorus, S. R. P., & Pravitasari, A. E. (2017). Land Degradation and Landslide in Indonesia. *Geography and Geography Education*, *1*(2), 61–71. http://sjdgge.ppj.unp.ac.id

Tadesse, G. L., & Kasa, T. (2017). High Human Exposure and Measurable Environmental Impact of Pesticides Application on Agriculture : A Review Article. *Advances in Life Science and Technology*, *55*, 13–22.

Tanti, N., Nurjannah, N., & Kalla, R. (2020). Liquid Organic Fertilizer with Aerobic Method. *ILTEK : Jurnal Teknologi*, *14*(2), 2053–2058. http://journal-uim-makassar.ac.id/index.php/ILTEK/article/view/415

Tata, I. (2020). *Menggugat Revolusi Hijau: Generasi Pertama*. Yayasan Tirta Karangsari-PAN Indonesia dan Yayasan Kehati.

Torres Fernández, A. (2024). Tawhid and Islamic Philosophy: Exploring the Unity of God in Islamic Logic. *An-Nahdlah: Journal of Islamic Studies*, *1*(2), 85–114. https://www.annahdlah-journal.com/index.php/an-nahdlah/article/view/6

Treadwell, D., Hochmuth, R., Landrum, L., & Laughlin, W. (2020). Microgreens: A New Specialty Crop. *Edis*, *2020*(5), 1–3. https://doi.org/10.32473/edis-hs1164-2020

Tsion, K., & Steven, W. (2019). An Overview Use And Impact Of Organic And Synthetic Farm Inputs In Developed And Developing Countries. *African Journal of Food, Agriculture, Nutrition and Development*, *19*(3), 14517–14540. https://doi.org/10.18697/ajfand.86.15825

Wicaksono, A. T., Niswati, A., Arif, M. A. S., & Utomo, M. (2022). PENGARUH DUA SISTEM OLAH TANAH DAN APLIKASI HERBISIDA TERHADAP RESPIRASI TANAH PADA PERTANAMAN JAGUNG (Zea Mays L.) MUSIM TANAM KE-5. *Jurnal Agrotek Tropika*, *10*(1), 75. https://doi.org/10.23960/jat.v10i1.5632

Wulansari, R., Hidayat, Y., & Dono, D. (2022). Aktivitas Insektisida Campuran Minyak Mimba (Azadirachta indica) dan Minyak Jarak Kepyar (Ricinus communis) terhadap Spodoptera frugiperda Insecticide Activity Mixture Neem Oil (Azadirachta indica) and Castor Oil (Ricinus communis) Against Spodoptera Frug. *Jurnal Agrikultura*, *2021*(3), 207–218.

Yudistira, M. R. (2021). Gunung Djati Conference Series, Volume 1 (2021) Conference on Islamic and

Socio-Cultural Studies (CISS 2020). *Conference on Islamic and Socio-Cultural Studies (CISS 2020)*, *1*, 1–7.

Yulipriyanto, H. (1997). Penerapan sistem pertanian terpadu dalam rangka pelestarian produksi menuju swasembada pangan berkelanjutan. *Jurnal Cakrawala Pendidikan*, *16*(1), 129–139.

Yuriansyah, Y., Dulbari, D., Sutrisno, H., & Maksum, A. (2020). Pertanian Organik sebagai Salah Satu Konsep Pertanian Berkelanjutan. *PengabdianMu: Jurnal Ilmiah Pengabdian Kepada Masyarakat*, *5*(2), 127–132. https://doi.org/10.33084/pengabdianmu.v5i2.1033

ZF, F. (2022). Compost Production for Soil Nutrition. *Open Access Journal of Waste Management & Xenobiotics*, *5*(2), 1–5. https://doi.org/10.23880/oajwx-16000173