

# Integration of Green Islam and Agro-Ecology for Food Sovereignty

Komunitas: International Journal of Indonesian Society and Culture  
12(2) (2020): 188-197  
DOI:10.15294/komunitas.v12i2.24318  
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p-ISSN 2086 - 5465 | e-ISSN 2460-7320  
<http://journal.unnes.ac.id/nju/index.php/komunitas>

UNNES JOURNALS

Ahmad Sihabul Millah<sup>1</sup>, Suharko<sup>2</sup>, Hakimul Ikhwan<sup>3</sup>

<sup>1</sup>Institut Ilmu al-Qur'an (IIQ) An-Nur Yogyakarta, Indonesia

<sup>1,2,3</sup>Universitas Gadjah Mada, Yogyakarta, Indonesia

Received: February 25<sup>th</sup> 2019; Accepted: March 01<sup>st</sup> 2020; Published: September 30<sup>th</sup> 2020

## Abstract

This paper discusses integration between Green Islam and an agro-ecological movement in establishing food sovereignty practiced by a community of Pesantren Ath-Thariq Garut, West Java. They have struggled for food sovereignty through agricultural production models by prioritizing local wisdom, respecting to organisms, dividing land with zoning systems, planting with polyculture system, consuming diversified food, and self-mastering to make fertilizer. Furthermore, they also have preserved local and inherited seeds as an approach to cultivate their farming.

## Keywords

agro-ecology; food sovereignty; green islam

## INTRODUCTION

This paper discusses integration of Green Islam and an agro-ecological movement in establishing food sovereignty practiced by a community of *Pesantren Ath-Thariq* Garut, West Java. Green Islam is an Islamic concept that confirms an integral relationship between religion and the environment. Agro-ecology is a practice and a movement in agriculture that is locally and organically oriented as a counter discourse for modern agriculture. Thus, this paper has a contribution in enriching theories of new social movements in a context of ecology and agriculture based on Islamic values. Besides, this can be a reference for other researchers who also observe similar movements.

Emergence of the **agro**-ecological movement cannot be separated from practices of the modern agriculture led by the green revolution. For forty centuries, knowledge of agriculture has been displaced. Modern ag-

ricultural models pioneered by multinational companies from West struggles to create a hegemony to practice one pattern of agriculture although there are various kinds of agricultural knowledge (Fakih, 2002: 273).

Some seeds have been patented and become private rights of companies and commercial commodities. The companies produces superior, cross-breed and hybrid seeds. Thousand types of local seed varieties gradually have been highly decreased (Fakih, 2002: 273). As a result, farmers become dependent on the companies' seeds. The modern agriculture has also produced various types of chemical fertilizers, pest control pesticides, and a number of agricultural technologies considered to support and to increase agricultural productivity.

### Corresponding author

Ngrukem, Pendowoharjo, Bantul, Komplek PP An Nur, Area Sawah, Pendowoharjo, Kec. Bantul, Bantul, Daerah Istimewa Yogyakarta 55186

### Email

[a.sihabul.millah.iiq@gmail.com](mailto:a.sihabul.millah.iiq@gmail.com)

The modern agriculture also has made local farmers in developing countries powerless to control their own food. The discourse built is that agriculture must be able to produce maximum profits by increasing the productivity of agricultural products. Although it can increase production and high productivity, many farmers in developing countries are not prosperous. Furthermore, it has led to negative effects in agricultural resources and the environment. These facts indicate that even though food security has been achieved, it can not guarantee existence of local food and dignity of farmers (Syahyuti et al. 2015: 96).

Based on the facts above, it needs a counter discourse against the modern agricultural discourse that considers ecology in the agriculture only for humans interests. After that, it encourages to have real actions or movements. According to Laclau and Mouffe (2001), a discourse or counter discourse can be followed by real actions for some changes. One of the communities that has reacted against dominance and hegemony of the modern agriculture is *Pesantren Ath-Thaariq Garut, Java*. They have combined practices of Green Islam and agro-ecological movement in realizing food sovereignty. Explaining these issues in detail, this article outlines two frameworks. The first is a theoretical framework regarding the Green Islam, the agro-ecological movement, and food sovereignty. The second framework is practical analyses regarding constructions of ecological and agricultural definition according to the community of the *pesantren*, and the integration of Green Islam and agro-ecology to gain food sovereignty.

### Green Islam and the Ecological Movement

Environmental issues also seriously become a concern of Islamic theology. Discussing environmental movements based on Islamic values, Matin (2010) mentioned the term *Green Deen*. *Deen* here is Islam. In other words, *Green Deen* can also be called Green Islam. Green Islam is a concept that requires Muslims to apply concepts of Islam to emphasize integral relationship between

religion and the environment or the universe (Matin, 2010: 3).

Green Islam has several principles. The first principle is the unity of God and his creation (*Tawhid*). This principle teaches people that everything originates from God (Allah). What is in the universe and what is on the universe are built by God. Everything comes from the same source, namely God (Matin, 2010: 6). The second principle is every creation is a sign (*ayat*) of God power. Following this principle means that seeing everything in this world is seeing signs of God power. If someone treats nature badly, it means denying signs of the power and greatness of the Creator (Matin, 2010: 6-7).

The third principle is that humans are guardians on the earth (*khalifah*). This principle teaches humans that human are created from one of elements of the earth, and they are a *khalifah* in the earth. Therefore, humans should maintain and preserve the earth to be better as he is composed of soil (Matin, 2010: 7). The fourth principle is that humans should maintain trust of God (*Amanah*) as a representative and protector of the earth (Matin, 2010: 8). This belief is a human promise to manage the nature (living beings and non-living beings) as well as possible.

The fifth principle is justice (*'adil*) to the environment. *'adil* is one of attributes of God, meaning order and equilibrium. A justice movement should start from itself before acting fairly to the environment. Humans should understand that their action can influence everything other than humans like land, sea, animal and so forth. The sixth principle is that human behaviors should be balanced with nature (*Mizan*). This principle teaches people to manage, maintain and use the environment well, without to be destructive or exploitative.

The principle above is still limited to normative concepts of Islam to the environment. However, the concept can be an ideology or normative basis of a social movement, especially an environmental movement, following by collective actions of a number of individuals or communities related to environmental issues. When be-

coming a social movement, Green Islam has similarities with a green movement that preserves the environment. The environmental movement has orientation to save the earth and support the preservation of nature where humans are part of it (Meliana, et al., 2013: 3).

### Agro-Ecology and Food Sovereignty Movement

It is undeniable that the green revolution has forced millions of smallholders to lose their agricultural lands and made them dependent on subsidized debt. 70% of agrobiodiversity in the world become extinct in agriculture (FAO 2009). When many smallholders has begun to shift away to apply the green revolution method in the 1970s, a number of farmer groups has begun to start agro-ecology system as an effort to improve organic substance of soils, conserve water, improve **agro**-biodiversity and control pests (Altieri 2004; Holt-Giménez & Altieri, 2013: 93).

Wezel et al., (2009: 2) classifies the meaning of **agro**-ecology into three frameworks: agro-ecology as science, as a social movement and as an agricultural practice. According to Francis, et al. (2003), as quoted by Wezel, et al. (2009), agro-ecology as a science is defined as “an integrative study of the entire food system ecology, which includes the ecological, economic and social dimensions, or food system ecology”. This definition is reinforced by Holt-Giménez (2006), as quoted by Holt-Giménez & Altieri, (2013), stating that agro-ecology is knowledge about agriculture with a small-scale, diversification and emphasis on ability of local communities to produce and increase innovations through farmer’s research with a broad approach.

Agro-ecology as a practice, according to Wezel et al. (2009: 9), is a new agricultural technique that is modified and adapted from alternative and environmentally friendly farming models. This agricultural model is often found in traditional and local agriculture. This practice aims to maintain soil fertility, regulate organic materials, and conserve natural resources. In addition, pest

control is created and used biologically.

Agro-ecology as an agricultural practice has existed since the 1980s in Latin America. This practice is seen as a basis of a sustainable agricultural development framework supported by ecologists, agronomists, and botanists in Mexico and Central America (Wezel et al., 2009: 4). Agro-ecology helps local farmers to improve alternative agricultural practices to react against the modern agriculture that tends to use chemical fertilizers and pesticides. Practicing agro-ecology, farmers will diversify agriculture, knowledge systems, and livelihood strategies that deal with capitalist agricultures (Wilken, 1988), as quoted by Holt-Giménez and Altieri (2013).

As a social movement, agro-ecology is an effort by farmer groups to establish food security, sovereignty and autonomy. Agro-ecology can also be interpreted as a movement of farmer groups to expand alternative agricultures through social partnerships to respond to environmental challenges in certain agricultural production systems. In Brazil, agro-ecology is a political movement of local residents for rural development (Wezelet al., 2009: 10).

The basis of the **agro**-ecological movement in Brazil is traditionally agricultural practices. This movement emerged in the 1970s by introducing alternative forms of agriculture countering the modern agriculture and introducing family farming models to establish food self-sufficiency and sovereignty (Wezel et al., 2009: 5). At that time, an agronomist, Lutzen Berger (1976), supported by NGOs and Catholic Church, together with environmental activists and farmer groups struggled for the alternative agricultures. Their movement resisted against pesticide contamination (Wezel et al., 2009).

A similar movement emerged in 1998 in Latin America, namely MAELA (The Agro-Ecological Movement of Latin America). This movement declared resistance to problems of environmental damages (Sevilla Guzmán, 2001), as quoted by Wezel et al. (2009). The movement advocated and controlled natural resources without being de-

pendent on chemical and modified genetic organisms, and it also promoted local experience and alternative knowledge to use and treat local varieties (MAELA, 2000). This movement also resisted circulation of modified varieties by campaigning local varieties.

At other places, a number of farmer groups such as *Campesino a Campesino* (farmers for farmers) in Latin America and NGO networks struggled for sustainable agriculture models by using effective agro-ecological practices in hundreds of thousands of land areas (Holt-Giménez, 2006). They promulgated for food sovereignty as a community right to consume healthy and fair food produced in environmentally friendly ways.

The concept of food sovereignty is relatively new. This concept was initiated by La Via Campesina, an international farmer organization, in 1992 (Lee, 2007). When WTO agriculture entered an international trade system, La Via Campesina promoted the concept of food sovereignty 1996 (Khudori, 2009).

Food sovereignty, according to Nye de'ni La Via Campesina Declaration (2007), is right of people to access healthy and culturally appropriate food produced through environmentally friendly and sustainable methods, and it is also rights to determine their own food and agriculture systems. Food sovereignty places people who produce, distribute and consume food at the center of food systems and policies rather than just demands of markets and companies. Food sovereignty considers interests and inclusion for the next generation. Food sovereignty offers a strategy to resist trade regimes and food companies and lead for food, agriculture, pastoral and fisheries systems that are determined by local producers. Based on this definition, it can be concluded that food sovereignty focuses more on the rights of everyone in certain regions to be able to produce, consume and distribute food independently.

Food sovereignty is a prerequisite for food security. The concept of food security has been widely accepted in many countries for a long time. The concept of food secu-

rity has begun issued since the end of the 1970s, while food sovereignty has begun to be concerned since 1992, 30 years later after the food security (Syahyuti et al., 2015). Food security, according to FAO (2003), is a situation when all people at all times have physical, social and economic access to adequate, safe and nutritious food that meets their food needs and food choices for an active and healthy life.

According to Lee (2007), as quoted by Khudori (2009), there are six basic elements that differentiate food security and food sovereignty: agricultural production models, agricultural trade models, instruments, approaches to agricultural genetic resources, and environmental discourses. The first element is agricultural production model. In this element, food security emphasizes industrial model in agriculture, monoculture and intensive chemical substances, but food sovereignty uses agro-ecological, multicultural, and sustainable farming systems. The second element is the agricultural trade model. In this element, food security uses free market model and export oriented, but food sovereignty tends to be protectionist and encourages local market. The third element is main organizational supports. In this element, food security is closer to the WTO, while food sovereignty refers to La via Campesina organizations. The fourth element is instruments. In this element, food security is closer to the Trade Related Intellectual Property Rights (TRIPS) instrument, while food sovereignty uses the International Planning Committee for Food Sovereignty (IPC) instrument. The fifth element is approaches to agricultural genetic resources. In this element, food security uses a system of patents and GMOs as a hope for the future, while food sovereignty is antipathetic and avoids the use of GMOs. The sixth element is environmental discourses. In this element, food security is more inclined to economic rationalism, while food sovereignty is closer to the discourse of green rationalism.

## METHODS

This research is located in *Pesantren Ath-Thaariq*, Sukagalih, Tarogong **Kidul, Garut**, West Java. Its research object was the community of the *Pesantren*. A type of this research is a qualitative research with descriptive methods and discourse analysis. The main basis of discourse analysis was text. The text referred to all infinite phenomena that could be interpreted (Lawrence et al., 1999: 486). The text is not only written texts, but also forms of speech that can be interpreted. Some examples of texts were words, reports, interview results and policies in forms of text material that produces world experience, words and practices (Horwarth&Stavrakakis, 2000: 10).

Data collection was conducted by using four techniques. The first technique was depth interviews with reference to guidelines. The informants interviewed were *kiai* (leader of *pesantren*), administrators, *santri* (student), local government, community leaders, social institutions, and individuals who have related knowledge. The second technique was observation. The observation was to obtain information about the Green Islam movement performed by the community of the *pesantren* in establishing food sovereignty.

The third technique was documentation. Documents studied were the *Pesantren's* profiles, diaries, reports, management team records, cooperation documents, photos of activities related to the Green Islam movement, articles in the mass media, internet and others. The fourth technique was to study audio-visual material such as training materials and the *Pesantren's* activities related to the Green Islam movement that had been documented in some audio visuals.

## RESULTS AND DISCUSSION

### Meanings of the Environment and Agriculture

In understanding new social movements, such as the *Green Islam* and agro-ecology movement, Laclau and Mouffe (2001) emphasize the concept of discourse as their analysis. Therefore, it is important to un-

derstand the meaning of the environment (ecology) and agriculture according to the community of *Pesantren Ath-Thaariq* with discourse analysis.

Discourse is structured totality resulting from articulatory practices (Laclau and Mouffe, 2001: 105). This totality includes linguistic and non-linguistic aspects or social aspects. In discourse analysis, all objects and actions have meanings, and their meanings are products of particular systems that have significant, specific and historical differences. The systems of meanings are contingent and never fixed. The aim of discourse analysis is to map processes that associate with how the meanings (sign) are determined and processes of determining the meanings are recognized so that the meanings are considered natural (Jorgensen and Phillips, 2002: 10).

Using the discourse analysis, there were three meanings of the environment constructed by the community. Firstly, it means unity of ecosystem where humans are part of the ecosystem (interview with **Jajang**, February 4, 2018). This means that humans, animals and plants needed each other. The second meaning indicated that the environment is a food chain where humans, animals, plants, and others are equal. This implies that humans can not position themselves as subjects and nature as objects. Both humans and everything other than humans are subjects (interview with **Nissa** wargadipura, February 3, 2018). Thirdly, it means that humans are obliged to maintain, care for, and did not damage nature because they are subject of each other (Interview with **Hilma** and **Salwa**, **March** 26, 2018). The construction of meaning above is applied by the community in the context of agriculture. Agriculture is interpreted by them as a farming practice that preserves the earth for the present and the future or called agro-ecology. This can be seen in vision and mission of the *pesantren*: Spreading knowledge and creating agro-ecological cadres caring for the earth, the humans and the future (<https://pesantreneкологи.blogspot.co.id>). Agro-ecology is interpreted as a movement and method management of ag-

riculture to create sustainable life as its main concept is “balance and sharing”. This is in line with a concept of Martin and Sauerborn (2013: 6) who stated that **agro-ecology** can be a system of agriculture and a movement to counter agricultural industries and modern agriculture.

The constructed meanings above are still general. Then the community has developed the environmental and agricultural discourse by articulating some Islamic teachings, namely *tauhid*, *khalifah*, *rahmatil lil alamin*, and *shadaqoh* as a counter discourse to the discourse adopted in capitalism and neoliberalism.

The initial concept believed by the community to relate the environment and the agriculture is *Tauhid*. *Tauhid* is a belief that there is no God but Allah. When someone believes in God as God, he should also glorify other human beings, as well as **His** creation and the universe. *Tauhid* is a form of transaction between humans and God, not with humans or others. Believers will not do harm to nature and certainly will maintain its balance, including in the field of agriculture (interview with Ibang Lukman, 2016 b).

When a human relates with Allah that there is no God but Him, he at that time also is a caliph (*khalifah*) in the earth. As a caliph, he should treat the earth as a holy place. He must not litter it with garbage or waste and should not damage it.

The concept of the Caliph above is strengthened by the community by the concept of *Rahmatil lil alamin* (a blessing for all nature). This concept can be interpreted that humans as representatives of God should spread blessing to nature, the living and non-living beings in the earth. The concept of *rahmatil lil alamin* considers that humans are equal to the earth or every God’s creation. Human cannot feel more superior than other beings. Because of the equality, the community cultivates their farms by not killing snakes, caterpillar butterflies, worms and others.

Knowledge from a *Hadith* of the Prophet Muhammad also has strengthened the agro-ecological movements of the

community. For example, a *hadith* referred by the community states that anyone who plants trees and then the fruit of the tree was eaten by birds; so it is alms (*shadaqoh*). Alms is not only for humans, but also for animals, plants and nature (interview with Ibang Lukman, 2016 b). In other words, people who plant trees or cultivate a conservation, it means they share with other beings. The more you plant, the more you give alms.

### Integration of Green Islam and Agro-Ecology for Food Sovereignty

Responding to ecological crisis and agricultural crisis, the community has participated in ecological recovery by cultivating 7, 500 m<sup>2</sup> areas of the *pesantren*. Together with their students and teachers, the leaders of the community have shared and practiced knowledge about the environment through Islamic teachings, and they also have designed a system of farming called agro-ecology (interview with Nissa Wargadipura, 2018). They have combined concept of agro-ecology and theology of Islam (Green Islam).

The combination of those concepts was a form of hegemonic struggle by the community to counter the modern agricultural system. There were several practices to integrate Green Islam and agro-ecology cultivated by the community in establishing food sovereignty. By using Lee’s concept (2007), at least there are two elements of food sovereignty developed by the community, namely agricultural production models and approaches to agricultural genetic resources. The agricultural production model of the community means stressing values of locality, respecting for all living beings, dividing land with zoning systems, planting with biodiversity models, applying food diversification, producing and controlling fertilizer. Then, the approach to agricultural genetic resources could be seen in the power of local seeds, inherited seeds and GMO.

### Caring for Practices of Locality

The community of the *pesantren* developed agricultural management concerning about

the local and traditional values. The practice of locality according to farmers' knowledge is importantly needed in agro-ecology (Schutter, 2012: 5). Preparation and management of rice fields are not ploughed by a tractor, but simply by let ducks and chickens play in the fields. The soil is fertilized by compost, such as by leaves and cattle feces. Also, remaining straws after harvest are stacked or spread to the rice fields (Wargadipura, 2016).

Grass and leaves falling around *pesantren* are processed into fertilizers or placed under big trees to be organic fertilizers. Practicing of those local wisdom, microbes and worms in the soil can get food supply. They have planted like sunflowers and peanuts to fertilize the soil. A large number of beans could be a fertilizer for plants. Purple palm is not fertilized because it can fertilize itself. This agricultural model, according to Nissa Wargadipura, is local wisdom inherited by previous farmer and needs to be preserved.

#### Respect for All Beings: Living and Non-Living Beings

In addition, the community of *pesantren* highly respects the all beings around the *pesantren* and rice fields. They apply principles of not doing harm for the beings. They provide houses for snakes, worms, microbes and others. Caterpillars and butterflies are left alive. Worms were breed and given space to live (interview with Hilma, 2018). They let some lands became bushes and plant several large trees for snakes and birds. The existence of snakes and owls can function to reduce number of rat populations.

To repel rice pests, they plant *gemitir* or *tahi kotok* plants on the embankments of rice fields. Respecting for the beings was a form of consciousness that can give them blessings. This is also part of maintaining the ecosystem and food chain. According to them, a perfect ecosystem is that all beings should strengthen and protect each other and not damage each other.

They believe that it is impossible for God to create all beings without any functions. They have their own function (interview with Ibang Lukman 2018 a).

The *pesantren* has taught their students that life is not only on the land, but also in the soil such as microbes that grow plants. That is the first spirituality learned by the students. They really respect the life in the land. So, the *pesantren* do not use pesticide fertilizers. If the soil is given pesticide or chemical fertilizer, the soil structure will dry out and the microbes inside the soil will die (<http://youtube.athariq.ecology.boarding.school>).

Respecting the beings is part of the concept of *rahmatan lil alamin*. The concept teaches humans to cultivate peace with all beings. Creating peace is a form of worship so that the beings are not harmed. All of our life is part of the *rahmatan lil alamin* (interview with Nissa Wargadipura, 2018)

#### Land Zoning

Beside the concept of locality, the community of the *pesantren* also implements land zoning systems. They divided the land of 7500m<sup>2</sup> into several zones (interview with Nissa Wargadipura, 2018). The first zone is the rice field specifically planted with rice. They plants rice three times every year. When they plant the rice, they give space for the rice. It needs for months to plant. Every harvest, its average is two tons of rice. They fulfill their rice needs by planting their own rice field.

The second zone is zone of food and wild plants. The zone is usually planted with cassavas, cannas, and various kinds of fruits. Those plants are around *pesantren* buildings. At every side of the *Kiai's* house, there are plants of cannas, cassava, sour soup fruit, guava, *talok*, *cirmut*, mango, and others. The plants are planted near the *pesantren* area, so that it is easy to take or to harvest them.

The third zone is seed saving area used to spread various seeds and also to grow various vegetables. In this area there are a seed dryer. It is used to dry seeds and various herbal medicines. The fourth zone is live-

stock zone (goats, chickens and ducks). The community of the *pesantren* uses livestock feces as fertilizers for all plants. There is also a fish pond in this zone. It contains of catfish, *tilapia*, goldfish and others. If the community wants to consume fish, they easily can take it. With this zoning system, the *pesantren* can truly be independent and establish the food sovereignty.

### Biodiversity as Allah's Will

The community also applies a concept of biodiversity in their agricultural system. According to them, the diversity of plants and animals is Allah's will. Humans cannot make them homogeneous. They prove the concept of biodiversity by caring for and preserving 52 types of food plants that can be eaten. This food biodiversity is locally based. When planting rice, for example, they also plant various kinds of other plants such as sunflowers, tomatoes, *taikotok*, chili, and *oyong*. Sunflowers are planted near the rice fields. Sunflowers have function to beautify and attract pests, so that they will not attack the rice. Pests are interested to yellow colors. They will come first to interesting colors. Besides, there were *taikotok* flowers. These flowers have ability to loosen the land and their flower can attract pests (interview with Nissa Wargadipura and Salwa, 2018)

The concept of biodiversity can be seen when they plant corns in one of the yards. When the researcher conducted observations, they had planted white corn from **Poso** and red corn from **East Nusa Tenggara**. These two seeds are local and inherited seeds from Indonesia. The two types of corn are smaller than hybrid corns. They plants them because they do not want to plant hybrid seeds. The corns were planted near turmeric, *kenikir*, lemongrass and mango plants. One yard has various types of plants. In other words, they refuses monoculture system because it is very harmful. If one plant is attacked by pests, all plants will also be attacked. The pests usually appear because of using the monoculture system.

### Food Diversification

In addition, the community established food sovereignty by diversifying food. According to Nissa Wargadipura, only with an area of 7500 m<sup>2</sup> are they able to feed 30 people in the *pesantren*. Their lands are mostly cultivated for food supplies. There are rice, corn, cassava, sorghum, breadfruit, bananas and others. Various vegetables are planted near the *pesantren*. Therefore, they can take their own vegetables. They also like other plants to consume such as cosmos caudatus, tomatoes, eggplant, baby cucumber, basil, spinach, ginseng, mustard greens, jackfruit, and others. Lemongrass and *secang* are consumed to drink. There are also fruit plants such as mango, guava, *muntingia calabura* (kersan), sour soup, papaya, cherry tomatoes, and others. They consume the fruits to get vitamin A and C (DAAI TV). According to Nunung, they can provide almost 60% of their food needs. They do not depend on the market. They are only dependent on market products that they can not produce, such as cooking oil, gas, and salt. Having a large number of various plants, the community can diversify carbohydrate not only from rice, but also from others. According to Nissa Wargadipura (2018):

*"We want to teach santri that we have many resources of carbohydrates. We can't be trapped only in rice. Carbohydrate is not always rice. Today people have a view that people who do not eat rice have low social status. We remind that there is no relationship between rice and social status. This is a misperception. In this pesantren, the santri used to eat food diversification. We have abundant wealth of food plants. Substitutes for carbohydrates are cassava, banana, breadfruit, and others. If they have eaten rice in the morning, the dinner will be replaced with cassava, corn, sago or others."*

The facts above illustrate that food diversification become a healthy lifestyle for the community of the *pesantren*. They not only campaign for the movement of food diversification, but also practice in their daily life. By these lifestyle models, they have countered hegemony of capitalist's view in

the food industry that rice is the main source of carbohydrate and becomes a mark of a particular social class. They have resisted the view with real actions in their everyday life.

### Producing and Controlling Fertilizers

The establishment of the *Pesantren Ath-Thaariq* was inspired by the idea of early *pesantren* in the past in Indonesia. *Pesantren* in the past was not only as a place to study religious knowledge, but also as a basis to resist colonialism and capitalism. However, resistance struggled by the *Pesantren Ath-Thaariq* in this era is not in physical actions, but in a form of suppression to capitalism and green revolution (interview with Nissa Wargadipura 2018 c).

They can produce and control fertilizer by themselves. They produce their own compost to fulfill their agricultural needs. How high the price of fertilizer in the market is, they will not be affected. There are several types of compost produced by them. For example, there is liquid fertilizer made of remaining leaves and weeds and mixed with lamb feces. The process of making the fertilizer needs three months. After decaying, it can be used as a fertilizer. Another liquid fertilizer is *kocing* (worm feces). It was made of banana tree which is cut into pieces, mixed with torn pieces of paper and doused with cow feces. After that, the worms will breed. The worm feces can become fertilizers. Besides, there is also a dry compost, such as sheep feces mixed with weeds, rubbish, and remaining leaves. All of those are used as a substitute for chemical fertilizers. These organic fertilizers are used to fertilize plants in the rice fields and in other lands.

In order to control caterpillars, *leafhoppers* and other pest attacks, they do not depend on chemical pesticide. They did not kill them. To expel the pests, they plant marigold (*gumitir*) or *tagetes erecta* (*tahi kotok*) plants in the rice embankments. To divert butterflies, they plant sunflowers. To control mice, they plant large trees. Many owls usually nest in the trees. In addition, they also provide home for snakes. In other words, they recover ecosystem and food

chain to avoid pest attacks.

### Producing and Controlling Seeds

To counter hegemony of modern agriculture, the community of the *pesantren* has struggled to be independent and maintained tools of agricultural production. They have their own seeds and fertilizer. They are not dependent on pesticides and modern agricultural technology. They are free from the market to buy fertilizers, pesticides and others. This was what Kiai Ibang Lukman called as the small struggle of the *pesantren* to oppose the capitalism of the green revolution.

The *pesantren* have two types of seeds, namely inherited seeds and local seeds. There are 175 types of seeds owned and cultivated by them, such as chili, *luffa acutangula* (*oyong*), *Benincasa hispida* (*bligo*), rice, tomatoes, corn, sorghum, *cosmos caudatus* (*kenikir*), mango, spinach, ginseng, scrambles, purple gutters, sunflowers, *cannas*, *caesalpinia sappan* (*secang*), and others. These local seeds were obtained from Nissa Wargadipura's ancestors and her friends from various regions in Indonesia. They do not plant hybrid seeds produced by seed companies. Moreover, they always criticize the practice of seed modification because it is considered to violate the nature of Allah's creation, and it is disrespectfulness to Allah as the Creator of the seeds.

Although they have hundred kinds of seeds, they do not want the seeds to be patented. There were a few institutions from government or private companies that offered to patent the seeds, but they rejected. They argued that these seeds belong to God, earth and everyone who want to plant and cultivate them. The seeds are God's products, and they are not *pesantren's* products (interview with Ibang Lukman, 2018).

## CONCLUSION

The integration of Green Islam and **agro**-ecology is interpreted as a movement and practice of agriculture applying the concept of balance and sharing based on Islamic values. It promotes to care for the earth, God

creations and the future. The forms of integration are to strengthen the local and traditional values, respect for all beings, make zoning systems, and diversify foods, produce and control fertilizers and seeds. In these ways, the community of *pesantren* is able to establish their own food sovereignty.

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