



Empowerment Pattern Based on Food Independence on the Indigenous Peoples of the Baduy Dalam Tribe

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ABSTRACT: The farming system implemented by the Baduy Dalam community still applies the traditional farming system with the mechanism of the farmland system, which is to rest the land after being used for farming and then wait for the time to be used again for farming. With the increase in the population, the need for food increases, but this has an impact on the small area of land because it has been converted into residential land. The purpose of this research is to find alternative solutions from the empowerment model that can be applied to the Baduy Dalam community to support food security in the Baduy Dalam community. The research method uses a qualitative descriptive method using a phenomenological and ethnographic approach. The location of this research is in Cibeo, Cikartawana, and Cikeusik Villages which are included in the Baduy Dalam area. The number of informants was 7 people consisting of the Head of Kanekes Village, 3 Deputy Puun, and 3 representative residents from each village. The results of this study are recommendations for empowerment models that can be carried out by a companion must meet the following elements, namely: 1) Empowerment of soil nutrient improvement with orok-orok plants, 2) Making Organic Fertilizer to increase plant fertility, and 3) Empowerment of MOL production.

KEYWORDS: Baduy Dalam, Empowerment, Food Security

INTRODUCTION

The Baduy Tribe is a term for the residents of Kanekes Village, which is located in Lebak Regency, Banten Province. There are several versions of the term Baduy that state this designation. The name of the Baduy tribe is taken from the name of the river in Kanekes village. The river is called the Cibaduy river and because the people live on the edge of the river, people start calling it the Baduy people [1]. In addition, the word Baduy arises from the word Baduyut, a type of banyan tree, which grows a lot around the Baduy forest and another version also says that the term Baduy began during the Netherlands colonial period which equates them with the Baduy Arabs [2]. The Baduy community is divided into two, namely "Baduy Dalam" and "Baduy Luar" [2]. The Baduy people who are very obedient to customs are called "Baduy Dalam" [2]. The Baduy Dalam people are considered sacred because they do not want to be contaminated by outside culture. Unlike the "Outer Baduy tribe", which has undergone many changes, due to interaction activities with tourists/people outside Baduy. One of these changes is the use of transportation services such as public transportation, motorcycles, and other means of transportation which are not allowed to be done by the people of Baduy Dalam who are only allowed to walk without using footwear such as sandals or shoes [3].

Another difference between Baduy Dalam and Outer Baduy is the cultivation system in the field. Currently, the condition of the field area owned by the Baduy people is getting smaller. This is due to the increase in the number of people who have made several areas that have been converted into residential areas. Unlike the Baduy Luar people who can own or only cultivate land owned by people outside Baduy, the Baduy Dalam people are prohibited from cultivating, let alone owning land outside the Baduy customary land. This rule is a customary provision that must be obeyed by the Baduy Dalam community. Therefore, the Baduy Dalam people can only use the fields on the Baduy customary land.

The daily life needs of the people of Baduy Dalam are highly dependent on nature in fulfilling them. In addition to rice farming, the Baduy Dalam people also sell natural products such as forest honey [4]. The traditional farming system with the mechanism of the forest land system is to rest the land after being used for farming and then wait for the time to be used again for farming [5]. The treatment in the bera system is carried out to maintain soil fertility, because the Baduy Dalam people prohibit the use of chemical fertilizers because it is contrary to customary rules [6]. The problem is that the area of agricultural land in Baduy Dalam is starting to shrink, while the population growth and the need for food clearly continue to increase. This condition makes



the farmland system that can be rested for 3-4 years become 1-2 years [7]. This will certainly have an impact on the decreasing level of soil fertility and the decline in rice production as the main source of food for the community. Therefore, the purpose of this research is to find alternative solutions from the empowerment model that can be applied to the Baduy Dalam community to support food security in the Baduy Dalam community.

METHODS

This research method is qualitative descriptive with a phenomenological and ethnographic approach. The technique of determining informants was carried out using the purposive sampling technique. The use of this technique is carried out to determine informants based on criteria that have been determined by the researcher with the consideration that the informant has a deep understanding of the customs of the Baduy Dalam community. The number of informants amounted to 7 (seven) people consisting of the Head of Kanekes Village, 3 (three) Puun Representatives, and 3 (one) residents as representatives of each village. Interviews, observations, field notes, and literature studies are the methods used to collect data, while data processing includes data reduction, data presentation, and verification. In testing the validity of the data that has been obtained, credibility, transferability, defendability, and confirmability tests are carried out.

RESULT AND DISCUSSIONS

Based on geography, the Baduy area is located at 6°27'27" - 6°30'0" North Latitude (N) and 108°3'9" - 106°4'5" East Longitude (E). The Baduy People's Customary Land is located in the area of Kanekes Village, Leuwidamar District, Lebak Regency, Banten Province. The area of Baduy customary land is 5,100 hectares which is divided into three areas. First, a protected forest area (entrusted forest) with an area of ± 3,000 ha. Second, the Baduy Luar area with an area of ± 1,400 ha. Third, the Baduy Dalam area with an area of ± 700 ha which is divided into three archipelago villages, namely Cibeo, Cikartawana, and Cikeusik villages.

The Baduy people use nature to meet their needs without destructive. Therefore, every element of the natural ecosystem consisting of water, soil, plants, and weeds is used by the Baduy Dalam community according to their needs. The following is a detailed explanation of the interaction between the Baduy community and the natural ecosystem based on the results of interviews with the Baduy Dalam community which is shown in Table 1.

Table 1. Interaction of the social system of the Baduy community with the natural ecosystem

It	Natural Ecosystem	Interaction in Baduy society	Interaction in the general public
1	Water	Irrigation used for agricultural purposes still relies on rainwater sources, due to the customary prohibition to make irrigation canals	Irrigation used for agricultural needs already uses an irrigation system sourced from rivers or drilled wells
2	Soil	Soil management uses a bera system to maintain soil fertility	Soil management is carried out by loosening processes, applying organic fertilizers, and inorganic
3	Weeds	No further processing of weeds after the weed control process	Weeds are used as materials for making organic fertilizer for plants
4	Plant	Rice plants that are cultivated are not traded. All are stored in <i>leuit</i> as a subsistence need and a traditional ritual necessity	Rice plants are cultivated to meet subsistence and commercial needs

Based on Table 1 above, it shows that the interaction between the social system of the Baduy community and the natural ecosystem is carried out without modern tools. The activities carried out by the Baduy people towards nature are carried out only



to meet the needs of life (subsistence) and have not led to the need for commerce. This is done by the Baduy community so that there is no large-scale exploitation of nature that can have an impact on the destruction of natural ecosystems. Both the Baduy Dalam and Baduy Luar people, they still use simple equipment in every processing activity. The use of water is carried out by the Baduy people by still using babu to drain water from the mountains for washing, bathing, and drinking water needs. In contrast to the general public who have used many drilled wells and used pumps to drain water. In tillage as a medium in farming, the Baduy community does not carry out soil clearing, be it hoeing or the use of fertilizer to improve the nutrient content in the soil. The Baduy people apply a farmland system, namely by resting the land used for several years to automatically improve soil fertility. Land tillage by means of hoeing is considered a form of customary violation because it damages the soil structure, but with many similarities between Baduy Dalam and Baduy Luar, they also have quite significant differences, for example in land use. The Baduy Luar community can carry out agricultural activities outside the Baduy customary land, so that the opportunity to increase agricultural production can be achieved, while the Baduy Dalam are not allowed to cultivate land outside the Baduy customary land.

Based on its use, land in Baduy Dalam is divided into three functions, namely as agricultural land, settlements, and village forests. Agricultural land is used by the Baduy Dalam people to carry out their economic activities. Rice plants are the main commodity as people with food needs of the people of Baduy Dalam. Rice is a commodity that is mandatory every year for the Baduy Dalam people to plant. Apart from being a food need, planting rice is also part of the customary rules (*pikukuh karuhun*) that must be implemented by the people of Baduy Dalam. Rice harvests obtained by the Baduy Dalam people should not be traded because it is contrary to custom. Based on observations and interviews in the field, the rice harvest is directly put into the leuit (a place to store rice). This is done as a form of anticipation of the arrival of food crises due to the impact of climate change.

With the traditional agricultural system, of course, it cannot have much influence on increasing rice production. The prohibition on the use of chemical fertilizers and other *modern* tools is one of the factors that make it difficult to increase rice production in Baduy Dalam. This will be a prolonged problem in the future, even though currently the rice food stock is sufficient for the next 3-5 years. With the increase in the population, it will have an impact on the expansion of residential land which makes agricultural land smaller. Therefore, the process of empowerment in the Baduy Dalam community needs to be carried out to increase food security.

Empowerment of the Baduy Dalam community can be defined as an effort to maintain food security in the Baduy Dalam community [8]. The results of field observations conducted during the approach process to the Baduy Dalam community show that a socio-cultural approach and a technical approach are needed to change the attitudes, behaviors, and work practices of the Baduy Dalam community. This is because the Baduy Dalam people are ethnic people who obey customary law. A simple life that is in harmony with nature is one of the forms of teachings that have been passed down from generation to generation to make the Baduy Dalam people humble and not greedy. Therefore, changes that have an impact on the structure of the natural ecosystem are activities that are avoided by the people of Baduy Dalam. *Puun* as the highest customary leader has the duty to ensure that the Baduy Dalam people carry out economic activities in accordance with the *karuhun pikukuh* [9]. As a guideline for the life of the Baduy Dalam community, *pikukuh karuhun* must be learned if a companion wants to empower in Baduy Dalam.

Understanding the prohibition of *pikukuh karuhun* is the main capital to carry out an empowerment model in the agricultural sector to support food security in the Baduy Dalam community. This will support the companions or extension workers in carrying out empowerment or counseling activities in the Baduy Dalam community so that they understand well the values and norms that the Baduy Dalam community believes. As a result of research observations and interviews, there are recommendations for empowerment models that can be carried out by a companion, namely:

1. Cultivation of orok-orok plants to fertilize the soil

In increasing rice production to support food security, soil fertility is one of the important factors to achieve that. The results of the researcher's observations and interviews with the Baduy community showed that there were no plants that they naturally planted and had a function in increasing soil fertility. Therefore, this is a potential that can be developed by the Baduy Dalam community to plant orok-orok plants (*Crotalaria juncea L.*).



Figure 1. Planting Orok-orok (*Crotalaria juncea L*)

Orok-orok plants are a type of plant that belongs to the family of shrubs and shrubs. The benefits of planting orok-orok are fertilizing the soil [10]. Land is part of a natural ecosystem that cannot be separated from the Baduy Dalam community. As a community that makes a living from agricultural products, land has an important role in the economy of the Baduy Dalam community. Land is a planting medium for the Baduy Dalam Farming community. The Baduy Dalam community maintains the fertility of their soil by implementing a land system, which is resting the land after being used for farming and then waiting for the time to be used again for farming. The problem is that currently the population of the Baduy Dalam community continues to increase, while the amount of land owned by the Baduy Dalam community ± 700 Ha [9]. With the increase in the number of population, it will automatically increase the number of food needs that must be met by each family. On the basis of this problem, there needs to be an alternative solution to solve the problem. As a result of observations in the field, the researcher did not find any type of orok-orok plant in the land that was being rested, while the role of orok-orok plants could be used to increase soil fertility.

Empowerment by planting orok-orok plants is an alternative that can be developed by the people of Baduy Dalam. This empowerment alternative is based on the balance of researchers from the results of observations and interviews in Baduy Dalam, because the people of Baduy Dalam reject land management by using modern technology or other chemicals to increase soil fertility. Orok-orok plants are also a type of plant that is not prohibited from being planted on the customary land of Baduy Dalam because it does not have a negative impact on the land in Baduy Dalam. By not contradicting the karuhun pikukuh, this empowerment model allows it to be applied in order to increase soil fertility which has an impact on increasing the production of agricultural products of the Baduy Dalam community.

The use of fertilizer from orok-orok plants produces the highest mustard greens with a size of 20.7 cm^2 at the age of 24 HST, while at 31 HST reached 32.25 cm^2 [11]. The benefits of using orok-orok fertilizer also have a real influence on harvest age, fruit size, plant length, and fruit production [12]. The results of previous research also stated that the role of orok-orok fertilizer can increase corn production compared to other types of fertilizers [13]. The results of the study are scientific evidence that the benefits of orok-orok fertilizer have a positive impact on improving and fertilizing plants, so the use of orok-orok fertilizer is an alternative that can be done to support the food security of the Baduy Dalam community.

As a forage fertilizer, orok-orok plants are fertilizers that can quickly decompose in the soil. The use of orok-orok plants as a nutrient supplier is when the flower buds have opened as much as 50% in the age range of 7-8 weeks before flowering because, because during flowering the soil N content begins to decrease. This will have an impact on decreasing sources of nutrient content to fertilize soil and farm crops in Baduy Dalam. After the orok-orok plant is ready to be used as forage fertilizer, the next process is the embedding of orok-orok plants for the decomposition process (weathering) with a time of 6 weeks. This time to maximize the decomposition process [13]. Therefore, the application of planting orok-orok plants that can be done in the field area of the Baduy Dalam community can be carried out for 3 months and 2 weeks, counting from the planting process to the decomposition process (weathering). The application of orchid plants as forage fertilizer can be done in several ways, namely by immersing them in the soil, using them as plant mulch, and can be used as orchid fertilizer by mixing them using MOL [14].



2. Making Organic Fertilizer to increase plant fertility

Organic fertilizers are materials that contain one or more nutrients that are beneficial for plant growth. These materials are made from natural materials such as plant residues and animal manure that have undergone decomposition processing, so making organic fertilizers is an effective and environmentally friendly way to improve soil fertility and plant health [15]. This alternative solution can be developed as one of the innovations to support the food security of the Baduy Dalam community. The Baduy Dalam community has customary rules that do not allow their people to use chemical fertilizers in the agricultural process, so the use of organic fertilizers is an alternative that can be developed to support increasing plant fertility. The use of organic fertilizers itself is actually not a new thing for the people of Baduy Dalam, because previously they had used natural materials to increase plant fertility, but the use of organic fertilizers is still not optimal in utilizing existing natural resources [6]. Therefore, the manufacture of organic fertilizers by maximizing the materials available in nature in Baduy Dalam can be developed to increase the plant fertility of the Baduy Dalam community.

In the process of making organic fertilizer, the first step that must be taken is to collect organic materials. Based on the results of observations and interviews in the field, the researcher recorded materials that can be found in the Baduy Dalam community as basic materials for making organic fertilizers, namely plant residues such as dry leaves and twigs, chicken manure, kitchen waste such as vegetables and food scraps, straw and other plant residues cultivated by the Baduy Dalam community, and wood burning student ash. The next process is by sorting and destroying the materials that have been collected. The crushing process is so that the materials are easily digested and accelerate the decomposition process. In the decomposition process, the role of chicken manure helps in the decomposition process, because chicken manure contains a source of nitrogen and microorganisms that function to accelerate the decomposition of organic matter [15].

3. Creation of Local Micro Organisms (MOL) used to accelerate the decomposition of organic fertilizers

Plant fertilization is an activity that provides additional nutrients to cultivated plants. Fertilization activities can support optimal plant development and growth. The content of nutrients such as nitrogen (N), phosphorus (P), and potassium (K) in fertilizers has important benefits for cultivated plants to supply nutrient deficiencies in the soil. The types of fertilizers are divided into two, namely organic and inorganic fertilizers. Organic fertilizers are fertilizers made from plants and animal elements such as manure, while inorganic fertilizers are types of fertilizers made from synthetic chemical elements such as Urea, KCL and NPK. The advantage of using inorganic fertilizers is that they are easy and fast to apply so that many farmers are more interested in using this fertilizer, but this is different from the people of Baduy Dalam who prohibit fertilization using chemical fertilizers. The use of chemical fertilizers is considered a violation of customs, because it is considered to damage the preservation of nature [6]. Therefore, in maintaining plant fertility in Baduy Dalam, the community carries out activities called *paring* (treating rice). This activity uses a variety of ingredients as herbs used to maintain plant fertility, especially rice and repel pests on plants [16]. These ingredients consist of noni fruits, laos, grapefruit and other ingredients [6]. The way to apply it is by splashing a mixture of these ingredients on the plant area. The observation results show that the fertilization process has not been optimally implemented due to the rejection of the Baduy Dalam community against the use of chemical fertilizers. Therefore, an alternative that can be applied in an effort to increase the production of rice and other crops is to use organic fertilizers to support food independence in Baduy Dalam.

In accelerating the process of making organic fertilizer, it is necessary to have bacteria in the decomposition process [17]. Therefore, the creation of MOL is an alternative that can be developed in the Baduy Dalam community. With materials sourced from nature, the process of making MOL certainly does not contradict the customary rules of the Baduy Dalam community. MOL is a solution produced from the fermentation process made from various resources available in the local environment, both plants and animals [18]. The manufacture of MOL consists of three components, namely: 1) Carbohydrates, 2) Glucose, and 3) Bacterial Sources. The benefits of using MOL are that it can fertilize the soil and decompose organic waste into compost. Therefore, this empowerment makes it possible to be applied to the people of Baduy Dalam, because the ingredients used are natural without a mixture of chemicals [18].

The process of making MOL is very easy to do, the equipment used is enough to use simple equipment such as a bucket for containers or by using large bamboo sticks instead of buckets and plastic to cover the ingredients that have been mixed. The materials used for the manufacture of MOL that can be obtained in the Baduy Dalam community are: First, to meet the carbohydrate component, you can use rice washing water (tajan water) [18]. Second, to meet the glucose element, coconut water and palm sugar water can be used which the Baduy people produce, while to meet the source of bacteria, banana bumps, rotten fruits and others can



be used [18]. These three components can be easily obtained in Baduy Dalam, because of their life side by side with nature. These ingredients do not have any chemical elements that are contrary to Pikukuh Karuhun, so the innovation of empowering the use of MOL as an alternative to accelerate the process of decomposition of organic matter in order to increase the production of plants cultivated by the Baduy Dalam community can be applied.

4. Planting genetically modified crops

In the context of today's global agriculture faced with increasingly complex challenges, the use of plant genetic engineering offers great potential to improve the productivity, resilience, and sustainability of agricultural systems. Through genetic engineering technology, plants can be modified to produce varieties that are superior in terms of crop yield, resistance to pests and diseases, and adaptability to environmental changes [19].

Agricultural products are one of the sources of income for the Baduy Dalam people to meet their daily needs. The types of crops cultivated by the Baduy Dalam people are not only rice, but other commodities such as corn, bananas, peanuts and other crops. In order to support the food security of the Baduy Dalam community, the focus of empowerment is not only on improving the planting media used but the cultivated plants are also one of the factors in supporting food security in Baduy Dalam. In practice, the people of Baduy Dalam have implemented the tumpeng sari farming system. If rice is a commodity that cannot be sold, then other crops are allowed by the custom to be sold, then the result is to meet other needs that cannot be made by the people of Baduy Dalam such as kitchen spices, salted fish and other products. Based on the results of observations in the field and interviews with informants, the Baduy Dalam people do not refuse to give goods or objects from people outside Baduy, as long as the goods do not conflict with customs. Therefore, the provision of superior seeds of plant commodities that are allowed to be cultivated in Baduy Dalam is an alternative that can be done as an effort to increase the productivity of agricultural products.

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