

Dulamayo Barat Village Community Empowerment in Agroforestry System Development

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Abstract. Nowadays, land management requires a paradigm recondition towards wise behavior in utilizing natural resources. An alternative that can be consistently applied to support this is the application of agroforestry patterns. The purpose of this service is to provide counseling, training, and assistance to the community in agroforestry development. This activity was carried out in Dulamayo Barat Village, Telaga District, Gorontalo Regency. The method used is focused discussion and group training. The procedural activities are divided into three stages, namely planning (observation and socialization), implementation (counseling, training, and fostering productive activities), and evaluation stages (reviewing the participation of agroforestry developing communities). The results obtained in this service activity are: (a) observation activities describing the existence of forest destruction, monoculture patterns, cultivation without land cover, and low socio-economic aspects; (b) socialization is carried out to the village government to establish cooperation and request support in community empowerment; (c) extension is carried out by providing material on the prospects for agroforestry development; (d) the training content provides reinforcement for the community to choose a combination pattern of agroforestry and top grafting; and (e) the evaluation phase shows that 60% of the community participated in planning-implementation, and 47% participated in the evaluation of the agroforestry program.

Keywords: Empowerment, Community Service, Agroforestry System

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INTRODUCTION

Dulamayo Barat Village is one of the fostered villages of the Faculty of Agricultural Sciences, Muhammadiyah University of Gorontalo. The village, which is located in the hill area of Dulamayo, Gorontalo District, has a stunning landscape view. An area dominated by hills at an altitude of 250-1000 m above sea level. Most of the area reaches 82% consisting of primary and secondary natural forest (Kow et al., 2015). People in Dulamayo Barat village generally work as farmers so that agricultural land can be found along the way to the village. The agricultural pattern carried out by the community tends to be monoculture, so it is not uncommon for trees to be felled to be used as agricultural land. Changing land use to monoculture expansion is the main problem (Anshiso et al., 2017). This can have many negative impacts on the rate of land

degradation (Bahua and Suparwata, 2018; Sarminah et al., 2018), drought, flood disasters (Caya et al., 2014), environmental damage and decreased agricultural production (Risal et al., 2014). As a consequence, it will be very difficult to restore the degraded land (Styger et al., 2007).

Management of agricultural lands at the community level today needs a large-scale recondition of the paradigm, so that it no longer relies on one monoculture pattern in cultivating crops. Many patterns have been developed, but for communities living in forest areas, the agroforestry farming model can be a sustainable income, environment and social solution. Apart from being a buffer for the ecosystem (Wardhani et al., 2013), agroforestry provides the prospect of progress towards increasing food production (Mayrowani and Ashari, 2011). So that it can prosper rural communities (Suharti et al., 2013; Rianse and Abdi, 2010). In an effort to provide awareness and strengthen rural communities on their awareness of sustainable land management, the Watershed and Protected Forest Management Agency (BPDASHL) established a pilot model for Agroforestry in order to maintain the water catchment area in the upper reaches of the Limboto watershed.

However, the farming pattern in Dulamayo Barat Village faced difficulties in changing the way of farming to become an Agroforestry planting pattern. This is where the role of universities as a form of tri dharma in the field of service, is obliged to provide direction, counseling and training in starting agroforestry development. This was initiated and packaged in community empowerment programs in agroforestry development for community welfare. Empowerment provides public space for access to information (Narayan, 2002), which is related to community power (Sadan, 2004). Empowered communities will be able to establish self-reliance and responsibility (Pratama et al., 2018), optimize all available resource potentials (Widjajanti, 2011), so as to provide bargaining power in social life (Najiyati et al., 2005). The objectives of this community service activity are: (1) to provide education to the community about agroforestry planting patterns, and (2) to assist and provide training in conducting nurseries in developing agroforestry patterns. With this community service, it is hoped that Dulamayo Barat Village will become a model village that develops agroforestry to protect the environment so that it can increase farmers' income.

METHODS

This community service activity is carried out in Dulamayo Barat Village, Telaga District, Gorontalo Regency (Figure 1). The service carried out by Lecturers and Students in the Agribusiness Study Program was carried out in April 2016, in collaboration with several organizations engaged in the environment and land management. The method used in this service is focused discussion and group training. Overall it is divided into three important stages, namely planning (observation and socialization), implementation (counseling, training

and fostering productive activities) and evaluation of activities. The stages of the service activities are as follows:

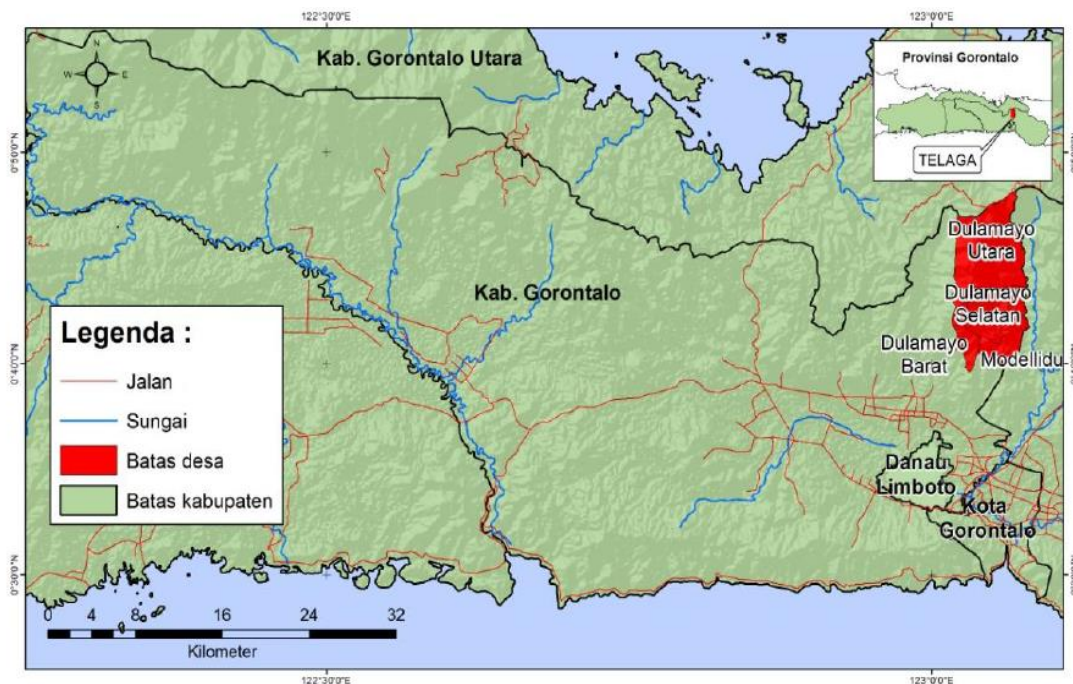


Figure 1. Location of community service in Dulamayo Barat Village (Source: Kow et al., 2015)

Observation

The community service observation activity was carried out in order to explore and explore the service area in the village of Dulamayo Barat. Some of the things that were carried out in the observation were (a) mapping of service areas including village boundaries, administration, village profiles, community socio-economic life, and village institutions; and (b) collecting secondary data related to community service needs.

Socialization

The socialization activities are intended to make visits and establish cooperation agreements between universities and village governments, as well as request support in community service programs. The existence of early socialization to the village government will have a good impact on program implementation. Socialization planning is carried out to provide an overview of the service activities carried out, making it easier for the implementation of the program.

Extension and training

The transfer of knowledge and experience is carried out through extension activities and training. Extension activities provide an understanding of: agroforetric development patterns, aspects of agroforestry farming systems, advantages and disadvantages of agroforestry application, and plant combination patterns. Furthermore, training activities are intended to

train the community in determining plans or designs of suitable and profitable plant combinations for the agroforestry developing community.

Develop community productive activities

As an integral part of service in the context of community empowerment, it is to provide direction to productive activities that can increase the economic coffers of rural communities. This is done by giving weight to activities such as nurseries in the context of providing forestry, plantation and horticultural seedlings. Furthermore, his assistance is so that the community has knowledge of shoot grafting and how to paste shoots from productive and superior shoots.

Evaluation

The final stage of a series of community service activities is to evaluate. This is intended to obtain an overview of people's understanding of agroforestry development. The success or failure of a community service can be seen from the participation and interest of the community in developing an agroforestry system. Therefore, this evaluation activity is important in measuring people's knowledge.

RESULTS AND DISCUSSION

Community service programs are integrated activities in empowering people to have independence and competitiveness with other communities in fulfilling their daily needs. The real content of empowerment is to strengthen the authority of the community in managing their own resources independently of both natural and human resources. In the village of Dulamayo Barat, empowerment adheres to the principle that is related to the preservation of nature in the prosperity of the people. Therefore, the theme raised was the development of agroforestry for the welfare of the community. In general, the results obtained in community service are acquired into the planning, implementation and evaluation stages.

In this planning stage, it includes observation (Figure 2) and outreach with elements of the village government (Figure 3) for the effortless running of community service activities. The observation activity carried out was to conduct a survey of the service location. The results obtained in this case include: (a) the current condition of the service area, there are still many monoculture agricultural models being applied, (b) the clashing behavior of the community which dominantly defoliates agricultural land and is carried out on a sloping topography which results in soil erosion. This can be seen from the accumulation of sedimentation on sloping areas or the edges of community agricultural land, (c) the change in the designation of forest areas to agricultural land, (d) exploratory village boundaries, and (e) tracing the socio-economic aspects of the community, the results show that 87 % of the people work as farmers, owned land which is managed by the community ranges from 0.6-1 ha (50%), from the aspect of education level 70% have primary school education, and 50% of the people have an income below Rp. 500,000 per month. In the initial socialization activities with the village government,

which in this case was received directly by the village head of Dulamayo Barat, obtained an agreement that the village government fully supported the empowerment activity in question. Moreover, the village of Dulamayo Barat is one of the villages fostered by the Faculty of Agriculture, Muhammadiyah University of Gorontalo. This has certainly received a good response from the village government. Besides that, the community also needs information, insight and assistance in carrying out routines in doing farming on dry land.



Figure 2. Field observation activities



Figure 3. Socialization activities to the Dulamayo Barat Village Government

In the implementation of this service program, it is carried out in two activities, namely the extension and training stages (Figure 4) as well as conducting productive activities to the community (Figure 5). Implementation activities are an important element in increasing community understanding and knowledge of agroforestry development. The results show that: (1) the counseling carried out by this agribusiness study program is in collaboration with the Agroforestry and Forestry Institute (AgFor) in the Sulawesi region. The collaboration of this

institution aims to exchange experiences in providing counseling to the community, theoretically represented by universities, and represented by AgFor applicatively. Therefore, this will further optimize the empowerment that is carried out; (2) in providing extension materials covering the scope of agroforestry, aspects of agroforestry, advantages and disadvantages of agroforestry, combining agroforestry methods; (3) In the training activity, a simulation is carried out on the pattern of combining various kinds of plants, both forestry-agriculture, forestry-agriculture-livestock, forestry-livestock, combination of annual and seasonal agriculture, and utilizing intercrops for productive farming. Here, farmers can find the choice of plant types to be combined on their land based on the commercial needs of the community; (4) the implementation of development of productive activities is carried out by training the community to be skilled in grafting and grafting from superior plant shoots. This is done so that fruit horticultural crops can quickly produce, so that they do not wait long enough to obtain crop yields. Other activities include training the community in comparing the composition of soil constituents in one polybag (a mixture of husks, soil, manure, sand); and (5) counseling also provides an overview of the pattern of organic behavior by utilizing various sources of organic litter around the residence which can be used as a source of organic fertilizer, either from plant litter or livestock manure.



Figure 4. Agroforestry extension and training activities



Figure 5. Develop community productive activities (making plant seeds)

The final stage of a series of community service activities is to evaluate the success of the community empowerment program that has been implemented. In this case the evaluation indicator used is to measure community participation in applying agroforestry methods. Pengabdi measures from an agroforestry farmer group that was formed in the village of Dulamayo Barat. The results showed that the percentage of community participation was at 60% in the planning and implementation stages, while only 47% of the community participated in the evaluation stage. These results indicate that in general agroforestry practices still need guidance and direction in order to achieve comprehensive and sustainable empowerment. It is admitted that this program is still in its infancy and needs ongoing technical guidance both by universities and the government.

Agroforestry is a land use system that combines woody crops, food and livestock, with the management of certain time and space to improve community welfare and agricultural sustainability (Kittur and Bargali, 2013; Achmad et al., 2012; Kassie, 2016; Rajagukguk et al., 2018). The agroforestry system is believed to be able to make abandoned and degraded lands productive and can restore environmental quality (Nurida et al., 2018). The agroforestry system carried out by the community on critical lands is in the form of agriculture, silvopastura, and agroforestry, where the existing agroforestry system is a traditional system that is managed according to local conditions and knowledge (Bukhari, 2009). Another pattern can be in the form of silvofarmaca, silopharmaca (medicinal plants), and under-standing crops (Ditjen BPDASPS, 2015).

The community service program intends to exchange ideas and opinions on community farming behavior. This is because this system has been practiced for a long time in agriculture but has not been well understood by society in modern times. Tactical steps that were initiated into community empowerment in the village of Dulamayo Barat resulted in activities that were taken seriously by the village community. The enthusiasm of the community in participating in a whole series of activities is so good, that the servants can foster productive activities such as

conducting plant nurseries in poly bags, training shoot and paste grafting, and directing towards conservation and organic cultivation. Because, in the effort to conserve agriculture, the community cannot be separated from the economic, social aspects and still preserving nature. Cultivation behavior must be done reciprocally that we protect nature, otherwise nature will provide comfort to us. This is where humans play a role in controlling the balance of nature. Likewise with conservation efforts in agriculture, the community is directed to do conservation farming because it is wiser and more just.

The implementation of the agroforestry empowerment development model from the research results is reported to show that intercropping communities can increase community awareness around the forest, maintain forest fertility, increase income and welfare in the vicinity of the forest area with a B / C ratio of rice 3.091, corn 2.288, peanuts 2.809 (Triwanto, 2011). The agro-silvicultural model with different types of plants for each agro-ecosystem, while the proportion of plants and spacing is adjusted according to the slope of the land, so that the ability of the land to support plant productivity is guaranteed. The prospective combination of agroforestry is gaharu-pepper based agroforestry because it is considered very profitable. The profit rate of gaharu agroforestry with an NPV of IDR 355,082,441, a B / C ratio of 8.54, and an IRR of 49.3, even far exceeding the profit level of the coconut monoculture system, oil palm and pepper monocultures that are widely developed in the field (Nurida et al., 2018). The intensification of the application of this agroforestry pattern can improve land productivity and control social and environmental issues that benefit farmers (Latumahina and Sahureka, 2006). Agroforestry systems contribute to helping optimize the yield of a form of sustainable land use and improve the livelihoods of communities (Afifuddin, 2006). At the level of farmers' perceptions, the agroforestry program only contributes 50% in efforts to rehabilitate critical land, the rest is for the economy, environmental services, and suppresses erosion (Suparwata, 2018).

Achieving sustainable community empowerment in the aspects of extension, training and mentoring is needed in agroforestry programs. The stages of group mentoring are carried out in several stages, namely: preparation and identification of community needs, making agreements with study groups, building core group nurseries, training on making superior seeds and mixed gardens, identifying sources of seeds and small businesses, and improving garden management (Sidhi, 2015). Partnership patterns with various stakeholders are important to be applied as an empowerment effort. However, until now the interaction pattern shown is still predominantly top-down. It was also strengthened by Setiawan (2018), socialization did not work effectively, and could only be done with opinion leaders (community leaders), even then it did not work effectively.

Empowerment of agroforestry appears to break up paradigm clashes that are always contradicting the paradigm of agriculture and forestry. The existence of agroforestry provides solutions and intermediaries that contribute from economic, socio-cultural and environmental aspects. At the farmer level, the practice of agroforestry has actually been practiced for a long time, with traditional planting techniques based on the urgency of the community's crop needs. This model is very well applied by people who manage land dominated by sloping lands (sloping topography), with economic and environmental objectives. The progress of mentoring and facilitation of agroforestry communities is actually also a contradiction and a deep question. The reason is that until now the agroforestry demonstration plot projects were running only at a time when assistance was still intensive. After the project period ended, the community did not understand what they were going to do anymore. The criticism of this condition is that the community should be prepared for independence before taking off. Thus, the empowerment of agroforestry communities for efforts to improve the economy and welfare occurs continuously.

CONCLUSION AND SUGGESTION

Dulamayo barat village is a conservation village located in the upstream area and as a buffer for the sustainability of the ecosystem in the watershed area. The description of agroforestry service activities shows that: (a) the observation activity describes the existence of forest destruction, monoculture patterns, cultivation without land cover, and low socio-economic aspects (education level 70% SD, income <IDR 500,000 / month, land ownership low); (b) socialization is carried out to the village government to establish cooperation and request support in community empowerment; (c) extension is carried out by providing material on the prospects for agroforestry development; (d) the training content provides reinforcement for the community to choose a combination pattern of agroforestry and top grafting; and (e) the evaluation phase shows that 60% of the community participated in planning-implementation, and 47% participated in the evaluation of the agroforestry program.

Suggestions that can be recommended are the need for sustainable assistance by local governments for the sustainability of the agroforestry program, and periodic evaluations need to be carried out in mapping deficiencies in existing agroforestry practices.

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