Improving quality living community with integrated farming system in Bantimurung District, Maros South Sulawesi

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Abstract. Integrated farming systems between livestock, crops, fisheries and plantations are very supportive for farmers and the risk of failure of one business can cover each other. The method of implementing the activity is the PRA (Participatory Rural Appraisal) / RRA (Rapid Rural Appraisal) Method. Participatory learning pattern approach, learning method, presentation, discussion, demonstration plot, field school, model, market, simulation. All are mixed into effective multi-combination methods. Activities that aim to increasing motivation to excite livestock farmers in carrying out better activities, to increase their productivity and income. Activities were carried out in two village groups in Bantimurung sub-district, namely Baruga and Tukamasea villages, groups engaged in fisheries, livestock and vegetable crops (Baruga). While other groups (Tukamasea) engaged in animal husbandry, garden vegetables. CSR-Bosowa funds in the form of improvements in village facilities, infrastructure and children's education in the form of scholarships. All business activities are carried out by the family of farmers and receive technology coaching from universities based on the results of research that has been tested, in addition to that PPL (Field Extension Officers) are also involved in assisting the sustainability of the technology that has been given, to improve the living standards of human resources

1. Introduction

Integrated farming systems in agriculture are very supportive of rural community businesses that generally only have narrow land to carry out their farming business. The average land area of rural smallholders is 0.25 - 0.5 Ha / family farmer [1]. Therefore, an integrated farming system between livestock, crops, fisheries and plantations is very supportive for farmers and the risk of failure of one of the businesses can cover each other, so that even if there is a failed business there is still income from other business. By carrying out integrated business in a narrow area, usually all family members involved directly work together to work on these activities. The production results in addition to covering the daily needs that are directly consumed, are also used to improve the economy of farmers and their families. This component can support each other to complement each other in increasing productivity by utilizing by-products from other businesses. The quality of life and human resources increase, both the quality of nutritional consumption through a more nutritious menu and the quality of human resources through increased knowledge and education of family members.

The activity was carried out in two pre-prosperous villages [1]. This activity is divided into two groups of villages in one sub-district (Bantimurung Sub-district), namely groups engaged in fisheries,
livestock and vegetable crops in the fields (Baruga Village). While other groups engaged in animal husbandry, yard vegetables and beef cattle (Tukamasea Village). The business in the fishery sector is maintaining vaname shrimp, planting vegetables with the tabulampot system, raising the ducks and beef cattle. All business activities are carried out by the family of farmers and receive technology coaching from universities based on the results of research that has been tested, in addition, PPL (Field Extension Officers) are also involved in helping the sustainability of the technology that has been given. To improve the standard of living of its human resources, Higher Education activities received additional support from CSR-Bosowa funds in the form of improvements in village facilities and infrastructure as well as children's education in the form of scholarships. The two villages are affected (ring - 1) by the activities of the Bosowa Cement plant.

The aim of this program is to improve the welfare of pre-prosperous rural communities to be prosperous through increasing knowledge/technology, education and village environmental infrastructure. The problem partner issues that become priorities include agriculture, livestock, fisheries, health, environment, education, all of which aim to improve the quality of life and become prosperous. According to data from Maros Regency, Bantimurung Sub-District still has families that have not been able to meet minimum basic needs so that it is declared as the highest poverty level. Both of these community groups are the impact area 1, there is a cement factory PT Bosowa Maros. So the problems that will be faced are social problems, welfare, economy, agriculture in the broad sense, health and education. The problems of Baruga village partners and Tukamasea villages can be seen in table 1.

2. Implementation Method
Application of technology to implementation in Community service was carried out in Maros District, Bantimurung Sub-district in two villages, Baruga and Tukamasea, South Sulawesi Province. The groups that received technology in the village of Baruga were fisheries farmers, duck farmers and Baruga Village Women Farmers Groups, while in Tukamasea Village duck and cattle farmers and Tukamasea Farmer Women Group. The method of implementing the activities applied is the PRA (Participatory Rural Appraisal) / RRA (Rapid Rural Appraisal) method. PRA / RRA is a way of learning with the community which is one method to realize an independent society. This technique places the community as researchers, planners, implementers, as well as evaluators in development programs. PRA/RRA is built on the recognition and trust in the value and relevance of knowledge, experience, and the ability of the community to solve their own problems [2] and [3]. Outsiders (in this case LP2M Hasanuddin University, Bosowa University, PT Semen Bosowa Maros, Local Government of Maros and other related institutions) function as facilitators and the community as the perpetrators. The approach method used is group approach method with participatory learning pattern, learning method using learning by doing, presentation, discussion, demonstration plot, field school (SL), model, market, simulation. All are mixed into effective multi-combination methods. The approach method offered to solve the problem by the implementer is mutually agreed with all group members (partners). Methods include counseling, training and visits (behavior). Activities aimed at increasing motivation to excite livestock farmers in carrying out better farming activities, so as to increase productivity and income [4], field school education (SL), demonstration plot, mentoring and mentoring, learning by doing [5]. The results of the implementation in the form of qualitative data comparing the initial questionnaire following the activities with the given science and technology. Referring to the problems in the two villages of Baruga and Tukamasea can be seen in table 2.
Table 1. Problems Partners in Baruga and Tukamasea Village

| Field | Problem | Solution |
|-------|---------|----------|
| Agribusiness (Animal Husbandry, Fisheries and Agriculture) | • Not yet utilizing the land and family workforce, including the wife and children of the farmer's family to the fullest.  
• Cattle breeding is still very traditionally released by looking for food on its own so that sometimes greening plants are damaged because of being eaten by livestock  
• There has been no touch of technology in improving in terms of animal feed and fish  
• Not optimal business of vegetable plant nurseries, family medicinal plants (TOGA).  
• Have not utilized the land and family workforce including the wife and children of the farmer's family to the fullest. | • Not yet utilizing the land and family workforce, including the wife and children of the farmer's family to the fullest.  
• Cattle breeding is still very traditionally released by looking for food on its own so that sometimes greening plants are damaged because of being eaten by livestock  
• There has been no touch of technology in the improvement in making animal feed and fish  
• Not optimal business of vegetable plant nurseries, family medicinal plants (TOGA). |
| Education | • Education is still low because it does not have the funds to continue education and now CSR funds have begun to provide scholarships at the elementary, middle and high school levels.  
• Appropriate technology to increase farmers' knowledge is still very limited due to limited agricultural extension workers. | • Education is still low because it does not have the funds to continue education and now CSR funds have begun to provide scholarships at the elementary, middle and high school levels.  
• Appropriate technology to increase farmers' knowledge is still very limited due to limited agricultural extension |
| Economy | • UMKM have not yet been formed  
• The absence of coordinated community product marketing | • UMKM have not yet been formed  
• The absence of coordinated community product marketing |
| Health, environment and social welfare | • Not yet maximized nutrition and health, education and community income knowledge.  
• Not every household has toilet, washing and toilet facilities (MCK)  
• The narrow embankment road makes it difficult to access transportation in and out of the village  
• Some mosques still do not have clean water and a place for ablution.  
• Not optimal knowledge of nutrition and health, education and community income. | • Not every household has toilet, washing and toilet facilities (MCK)  
• The narrow embankment road makes it difficult to access transportation in and out of the village  
• Some mosques still do not have clean water and a place for ablution. |
### 3. Result and discussion

#### 3.1. Situation analysis

The two villages chosen were the villages that entered the first ring of the impact of the Bosowa cement plant namely Baruga village and Tukamasea village, therefore PT Semen Bosowa must pay special attention to improving the welfare of the community in the two villages. The CSR priority program is to increase the availability of facilities and infrastructure to prosperous living standards, which means a decrease in the number of poor families. Now several activities have been carried out to improve their welfare, such as improving education and the environment so that the availability of facilities and infrastructure for living standards from the pre-prosperous has prospered. The CSR priority program refers to the CSR mission, which gives blessings to the community by building a pioneer of the national economy, this is in line with the basic needs that are urgently needed to be fulfilled by the availability of latrines and clean water for the community, around the PT Semen Bosowa factory.

Bantimurung District is a rice field area, so that rice straw waste is obtained. Agenda in the livestock sector in Baruga and Tukamasea villages are ducks and livestock. For Baruga and Tukamasea villages,
the availability of rice straw, the use of rice straw will be given to ruminants followed by the addition of feed additives to improve nutritional quality in the form of multinutrients. Cattle farmers in Tukamasea villages generally have an average of 2 cows / family. Cultivation Azolla is a priority for duck feed because the protein content is high and easy to breed, especially in the village of Baruga where many fish ponds are found. The cultivation of vaname shrimp is the choice of farmers, considering that the current pond water content is high salinity and farmers feel that the maintenance of catfish is difficult to market for their products, but vaname shrimp is easily marketed.

The conditions in the regions that are relevant to the problems handled include: duck farming because the community has been accustomed to raising livestock traditionally, but with simple feed, productivity is very low. Preserving duck eggs using salt and herbal ingredients so that they can produce different products from similar products on the market is very appropriate, can increase the low price of eggs, because they are sold after boiling for tourists who come to Rammang-Rammang tourism park adjacent to Baruga village, cultural / historical tourism in Leang-Leang and Bantimurung waterfalls, all of which are still in one of the Bantimurung Districts. In terms of environment and sanitation there are not enough latrines, clean water and a healthy environment. To improve the community's economy to be prosperous, there needs to be activities to process and sell yard products in the form of vegetables at tourist sites on holiday days, is one of the breakthroughs to increase people's income. Efforts to strengthen the economy need to be established by micro, small and medium enterprises (UMKM).

3.2. Technology in the fields of animal husbandry, fisheries and agriculture

Technology assistance in the field of animal husbandry includes duck farming with the use of ammoniated bran, herbal ingredients, local feed, EM-5 and EM extract. The purpose of applying this technology is to increase productivity and reduce / not use synthetic antibiotics and other chemicals for natural disease prevention and disinfecting. The use of local feed and ammonia bran to reduce the cost of feed is very expensive (50 -70%) of all production costs.

Appropriate technology that is easy to implement and cheap is very much needed by rural communities. In the field of animal husbandry technology the use of herbal ingredients has been proven as an alternative to the use of synthetic antibiotics. Now with the prohibition of antibiotics in feed as a feed additive since January 1, 2018, various efforts that have been carried out need to be a concern of farmers and all those involved in the interests of prohibiting AGP (Antibiotic Growth Promoters). The use of Labio-1 herbal ingredients has been studied since 2006 to 2011 and proven to prevent diseases caused by Gram positive and Gram negative bacteria [6] and can prevent diseases caused by viruses [7]. Antimicrobials contained in herbal ingredients are expected not to cause any residues in livestock products given, while the use of synthetic antibiotics has been shown to be contained in the products produced.

EM-5 and EM extracts are natural pesticides that do not cause residues, so they can be used for livestock and vegetable crops. The use of bran ammonia is a low technology of bran protein in the form of vegetable protein after going through the ammoniation process to produce higher animal protein with more essential amino acid composition. Action research results that have been carried out on domestic poultry that are maintained extensively result in increased egg production, greater egg weight, heavier child /doc, child mortality to adult are greatly reduced, the brooded chicken doesn't lose weight [8]. The LIPI program, of multinutrient lick in Enrekang in cattle that have been extensively maintained, shows an improvement in the growth compared of cattle fed rice straw as their feed. In the dry season rice straw is the main food with low quality, but with the addition of multinutrient lick as a feed supplement can improve the lactation of the Bali cows [9].

The use of local feed for livestock can reduce feed costs [7] and vaname shrimp with broiler gut flour will reduce the cost of feed so that it is used through the fermentation process. Vegetable plants that are kept in pots with organic fertilizer media and sprayed with EM-5 and EM extract will produce increased profits because livestock become healthier. Likewise [10] uses maggot and artificial feed for growth Parrot fish to reduce the amount of expensive factory feed. The availability of cow feces is needed for
vegetable growth. The quality of organic fertilizer is processed first, organic vegetables that are becoming popular with middle and upper class people.

The integration system in the field of fisheries is to maintain vaname shrimp and in this activity in addition to being fed manufacturers it is also substituted with feed ingredients in the form of small sliced chicken intestine stew according to the size of shrimp. Additional assistance provided is the procurement of water pump and water pump so that the O2 content of pond water is sufficient for the growth of vaname shrimp.

The agricultural activity is the use of the yard carried out in Tukamasea Village and agreed on the implementation of 50 packages of vegetable and medicinal plants (TOGA) and carried out by a group of women farmers. To cultivate medicinal plants (toga) some seeds are obtained from Makassar such as: red betel vine, continued life, red binahong, onion, god crown and others. Vegetables are tomatoes, chili, mustard greens, green and purple eggplants, cucumbers, papaya (several types), long beans and Cavendish bananas. For livestock and plants natural pesticides such as EM-5 and EM-extract are used to reduce fly populations. The use of multinutrients in cattle fed rice straw. The help of PT Bosowa's cement factory is to improve environmental sanitation in the form of making family latrines, renovating mosques (latrines, floors, ablution sites) and providing clean water, improving the environment (concreted village roads) and providing scholarships for children in the village (elementary, middle, high school) and fostering dance studios in the village.

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