Agricultural development within the rural-urban continuum

Book of abstracts

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Agricultural development within the rural-urban continuum

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Engineering Fortification Farms: Empowering Innovation of Local Farmers Based on Animal Science and Biotechnopreneur in Hargorejo Village, Kulonprogo, Yogyakarta

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Abstract

The Hargorejo village is one of a potential farming villages in Yogyakarta, but the people's knowledge about livestock (animal science), such as breeding, is still low and traditionally implemented. Thus, Hargorejo village can be developed by implementing “Engineering Fortification Farms” program. This is an innovative student programme concerned with the Hargorejo farmers condition. This programme including mentorship for farmers, counseling of healthy livestock, training of feed fermentation manufacture based on biotechnology and followed by training of entrepreneurship by Bengkel Pupuk (a centre for manufacturing fertiliser). The implementation of those methods consists of 3 stages. The first stage is socialisation; second is implementation and third is monitoring of the programme sustainability with the expert guidance. During 3 months, the farmers were eager to follow any training. 85% farmers came early in every event. They were also active in any discussions and training conducted. They were expected to make approximately 200 kg feed supply fermentation in a one production. They were provided as a primary feed during the dry season. Therefore, the supply of livestock feed nutrition needs to be fulfilled for the optimum productivity of the livestock. An organic fertilisers, produced from the animals waste made by the farmers, is now beginning to be developed and being used as a fertiliser in exchange to the chemical fertiliser. By this program, the local farmers are expected to be able to fermentate feed for their cattle's nutritional supply needs during the dry season (biotechnology) independently. They can also create and manage bengkel pupuk as a livestock waste treatment facilities to improve their economy in the livestock sector. This community service programme will able to educate farmers as a solution of livestock raising, helping farmers in feed managing problems during the dry season and optimalisation of potential waste to get a profit as a result of entrepreneurship based on animal science. This community were also expected to increase the creativity and encourage the farmers to be more productive in managing forage livestock feed. In addition, This programme will give a motivation for the farmers in Hargorejo village to be independent and have a decent life.

Keywords: Animal science, biotechnopreneur, empowering, mentorship
INTRODUCTION

Hargorejo village is located in Kokap Subdistrict Kulon Progo Regency which lies in hills area that length across the village. This condition makes the residential patterns are converging. The distance from house to house is far enough. A hustle of the city have not reached this village so does internet service, shops and large supermarkets. Based on recent data obtained, 90% of the villagers are farmer who works on their own field or rent a field. Their side job is a breeder. Many cows and goats are maintained by the villagers. They choose to breed the cows because they can get the feed availability from agricultural waste on their field. However, one thing that leads the farms not well developed is the difficulty of feeding during dry season due to the dry land. Meanwhile, the plant were death during this season. In order to strengthen the ties of kinship between people, also for the benefit of society development, the village formed several community organizations. One of which is the Farmer Group. The purpose of this organization means to discuss about farming not only about plant farming but also diary farming. In this group, people works together to build and develop a better diary farm in the village of Hargorejo. The existence of the Farmer Groups who are concerned about diary farm problem is underlying this program. With this program, the farmers hope to gain knowledge about agriculture and animal husbandry. So the future agriculture and animal husbandry in this village can be more advanced that improve people's lives.

Hargorejo village, Kulonprogo, Yogyakarta is a dry agricultural area which has many potential, they are: the large amount of population, vast territory, and one of the beef cattle breeding centers in Kulonprogo. On the other hand, the process of raising livestock in the Hargorejo village is still far from eligibility. It can be seen from the condition of the shelter, feeding and livestock's waste which is still not treated properly. The farmers feed their diary animals with just a chopped green with gobang and given directly to the livestock. This is not a major problem in rainy season because the grass is available in abundance. Nevertheless, this will be a big problem due to the limited forage in the dry season. This limitation is due to the areas surrounding residents experiencing drought, causing many plants die and the soil becomes barren. If people are able to manage a durable and not easily decompose feed in the rainy seasons, the farmer will be no longer depends on the season entirely.

Dairy farm business is a process of combining production factors such as land, livestock, labor, and capital to produce farm products. The success of the diary farm business depends on three elements; seed, feed, and management or maintenance. Management includes reproduction (mating management), feeding, shelter, and animal health. Management also includes the production handling, marketing, and employment settings. However, extensive animal husbandry (traditional) in feeding and improper shelter conditions can cause an anoptimum reproduction that makes the farmers welfare is not very good. An innovation program must developed to improve the people's prosperity.

Most of the local farmers in the Hargorejo Village, Kulonprogo, Yogyakarta is in the medium to low class life. Therefore, the majority of them never get an education. They have neither high in knowledge nor basis in Animal Science. So, the way they breed and rise the dairy animal is still traditional and enclosure management is haphazard. Moreover, with the difficulty of feed availability based on the season, the people were difficult to gather their forage needs in the dry season. They even have to sell the goat they were kept to buy feed for their cattle. It worsened the economic conditions of local farmers. In addition, local farmers did not understand how to manage livestock waste properly. It can actually be used as opportunities for entrepreneurship to increase the farmers level of economic activities. But, the farmers tend not to have an entrepreneurial spirit (entrepreneurship) and therefore can not take the advantage of livestock waste's potential optimally.

Community service activities through the "Engineering Fortification Farms", aims to provide guidance and training on farm-based Animal Science, skills for local farmers in making protein-based feed fermentative biotechnology, training for entrepreneurship (entrepreneurship) for local farmers in the field of livestock waste. Then be expected local farmers to understand, comprehend and apply the way of good and right farming according to the animal science. This community were also expected to increase the creativity and encourage the farmers to be more productive in managing forage livestock feed. In addition, by this program, the local farmers were expected to be able to make fermentative feed independently for the nutritional needs of cattle supply in the dry season (biotechnology) and be able to create and manage "workshop fertilizer (bengkel pupuk)" as a livestock waste treatment facilities to improve the economy in the livestock sector.

MATERIALS AND METHODS

The community target of this program is the 10 farmer groups in the Hargorejo village, Kokap, Kulonprogo, west Yogyakarta. The method used in this program was by a sustainable participatory approach.

1. Observation

The goal is to determine the situation and gathering information about the number of families who have livestock, number of livestock groups, and the conditions of livestock. This information became the basis to analyze the problems and formulate strategies for the program. This information was obtained through interviews with local residents and Head Village of Hargorejo. While some information, such as the condition of the region, socioeconomic circumstances, and so
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forth, obtained from the documents that available in the office of the village hall.

2. Socialization

The first program was socialized to the Chairman of RT, Chairman of RW, livestock farmer groups, local village leader and the people in this village. So the people understand the program and the implementation of program have been smooth.

3. Implementation of program

The series of this program are:

a. Mentorship program

Mentorship is one of the main programs of the Engineering Fortification Farms, which aims to provide learning on how to maintain the diary farm and the health of livestock for the local farmers. In this mentorship process used a method in the form of interactive sharing directly by visiting the Village Hargorejo, Kulonprogo. This involves students in collaboration with DIY Department of Agriculture and Livestock as the primary agent that has experience and concern for the fate of local farmers. Mentorship program is one of the main efforts in providing learning, education and knowledge in the field of farming to the local farmers in Kulonprogo. The mentoring process is continuously made to fit the main objective of the program to empower the local farmers based on scientific knowledge of Animal Science and Biotechnology. Youth, in this case, students, is part of Indonesia's sustainable development. It's role can not be underestimated in an effort to help the government. A student program entitled "Engineering Fortification Farms" comes as a facilitator for the more prosperous life of the local farmers. In this case, one effective way is sustainable mentorship.

b. Feed Fermentation Preparation Training

Program outreach activities to be performed include several stages: First, Make a group formation of the farmers. At this stage, the farmers were divided into small groups for approximately 8-15 people each group. The purpose of this group is to facilitate the management of the feed. Second, gathering animal feed. At this stage, each group were requested to collect their forage feed. The implementation were coordinated by the Chairman of each group. Third, classification of feed. The collected material, then classified according to the type of feed, including feed of forage, dried foliage, or feed including grass. It aims to facilitate the processing of the feed. Next, followed by processing the feed into a feed fermentation.

c. Sharing and Inspiring

The next flagship program of "Engineering Fortification Farms" is to share and inspire. This method allows volunteers in carrying out activities with local farmers like introductions between components of society, the provision of free meals and social events. Besides, motivational training were also given to the local farmers gradually so that the spirit could be maintained and the farmers will not easily give up in the breeding process. It is one of the main social responsibility of students as an agents of change.

d. Preparation of Entrepreneurship

The fertilizer workshop (bengkel pupuk) conducted by collecting cow or goat dung from each family as the farmers saving. Furthermore, these savings were processed into organic fertilizer that can be taken any time for their farming needs. Beyond the needs of the community, fertilizer marketed and members can withdraw their saving after fertilizer sold.

The long term goal of "Engineering Fortification Farms" is to eradicate poverty through education and skills training in the field of animal husbandry. The next program is equipping entrepreneurship conducted by partners and cooperative team of the program. The purpose of this method is that local farmers have skills that can be developed to increase productivity to achieve collective prosperity.

Debriefing entrepreneurship of the program is also accompanied by the assistance of the organization and the volunteers who are experts in their field. Entrepreneurship is closely related to education and skills training in order to bring creative and innovative ideas, they cannot be separated from education because entrepreneurship demanding independence. Meanwhile, independence is a form of character needed to build in each farmer. Entrepreneurship education is given in the form of training conducted by the expert (trainers and coaches from the local farms and diary farmer in DI Yogyakarta). Entrepreneurial aptitude is more emphasis on practitioners and not just theory.

e. Mentoring and Evaluation

Assistance is needed to help the local community and society farmers in resolving the difficulties experienced in the field. In addition, the guidance is intended continuously to motivate the farmers and the general public so that they will not easily give up. Hopefully, this program can be implemented optimally to improve the prosperity of the community and local farmers in the village Hargorejo, Kulonprogo.
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Table 1. Schematic of Empowerment Method.

C. RESULT
Based on the implemented programs, Farmers' enthusiasm is very high. Each member of the group is now eager to practice the manufacture of fermented feed. This is proven by many people having a supply of feed fermentation on their respective homes. In addition, farmers are able to process livestock waste into organic fertilizer and they start to switch plant fertilizer into organic fertilizer that they made for their own agricultural purposes.

D. DISCUSSION
The enthusiasm of farmers in this program is the first known results. Farmers are eager to follow any training conducted. This is apparent in every event, the citizens are present early, before time began, reaching 85%. In addition, farmers also play an active role in any discussions, or when training. The training became a very useful learning so that breeders acquire the skills, concepts, rules, or attitudes to improve performance [1]. In addition, civitas academica as an associator is able to communicate well with the farmers. It is also a factor that determines the success of a program [2]. With this program, farmers' empowerment could be implemented. Farmers are really associated by the experts ranging from theoretical aspects to practical aspects of the field. In addition, to make the farmers independent in applying what they got from discussion and practice, the assistance is done continuously. Feed fermentation from the farmers, which results were tangible, obtained from this program. Each group has an approximately 20 kg average of livestock feed fermentation supplies. These results were used by individual farmers to provide for their livestock, especially during the dry season. Therefore, the supply of livestock feed nutrition needs to be fulfilled for the optimum productivity of the livestock. The nutritional requirements of beef cattle include carbohydrate 60-75%, CP 12%, 3-5% LK and other micro elements such as vitamins and minerals [3]. Fermented feed will increase the quality of the nutrients contains [4] and increased palatability of feed which livestock prefer. In addition, by feeding fermented, farmers can reduce feed costs to be incurred. It is because more than 60% of the cost of production is the cost of feed [5].

Preparation of fermented feed is very useful for farmers who have been unable to process the abundant food in the rainy season. They can preserve feed for supplies in the dry season. Feed problems in the dry season that had haunted them now started to have a bright path. Breeders were not afraid anymore to develop their businesses so that the welfare of dairy farmers is increasing. This is known that the farmer's welfare is depending on the income they receive from the farm business. In addition, it is able to support the Government of Indonesia in pursuit of self-sufficiency meat 2014. An organic fertilizers, produced from the animals waste made by the farmers, is now beginning to be developed and being used as a fertilizer in exchange to the chemical fertilizer. Livestock waste in the form of feces and urine can be processed into organic fertilizers which contain a complete nutrient required by plants [6]. The most essential nutrients are K, N, P, Mg and S [7]. In addition, organic fertilizers can also increase soil fertility, improve soil structure and characteristics, increasing the absorption capacity of the soil water, increasing soil microbial activity, etc [8]. Farmers' skills in livestock waste management is a value that must be developed. Diary farmers who also works as a farmer is also able to reduce the cost of fertilizer indirectly.

Based on the programs that have been implemented, the empowerment of farmers with the right system is capable to change their mindset to optimize their businesses better. With the abundance of potential, breeders should be able to develop their businesses in the field of animal husbandry. So the fermentation feed manufacturing innovation become a feed solution to the crisis during dry season. In addition, the utilization of livestock waste is processed into organic fertilizer can be integrated into the agricultural world to increase the farmers' welfare. Necessary support from the
various parties in the process of the program, either from the Government, practitioners, academics and the public to work together to build the farmers who empowered global competitiveness and meet the national food needs in the field of animal protein. This program can provide an inspiration (as a pilot program) to other people around Yogyakarta in particular and in general all over the archipelago, which has the potential for a similar farm. So the more farmers could implement this program, the more advanced the economics would.

E. CONCLUSIONS

With the implementation of the innovation Engineering Fortification Farm program of community empowerment, local farmers are expected to understand, comprehend and apply the good and right farming system according to animal science. In addition, the local farmers are expected to be able to fermentate feed for their cattle's nutritional supply needs during the dry season (biotechnology) independently as well as being able to create and manage fertilizer workshop as a means of sewage treatment farms to boost animal husbandry sector of the economy and foster entrepreneurial spirit so that people become independent.

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G. REFERENCES

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