

What is the sustainable agriculture and what should we think for realizing sustainability?

~Idea of sustainability by visiting agriculture fields in Indonesia~

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Introduction

Recently, sustainable development is focused on in a broad range of fields as a solution of lack of energy and food caused by increasing population in the world. Especially, since agriculture is applied easily to several points such as utilization of energy and food supply, its sustainability is considered important.

As shown in Fig.1, Indonesia is one of the developing countries which have the rapid population growth. Lately, the introduction of agricultural technic and machine from other countries, on the other hand, however, the development cause the destruction of the environment and food security problem as with developed countries. That's why they focus on sustainable agriculture.

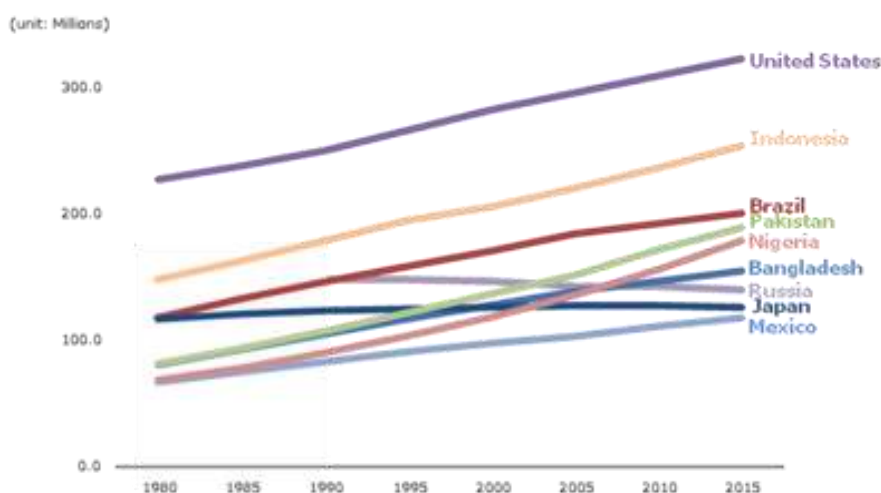


Fig1. The population trends of high population countries (except China and India).

(INTERNATIONAL MONETARY FUND web site)

Purpose

Some universities in Indonesia try new technology, method, and machine and so on with farmers near their campus for clarifying the best way for sustainable. In this work, we visited some of the fields which cooperate with universities or which try to introduce technology for sustainability. Furthermore, we discussed what is the sustainability of agriculture and what should we think for enabling to realize it.

Methodology

< Field surveys and schedule >

To cognize the characteristics of agriculture in Indonesia, we visited 3

different types of field and interviewed ways of farming. The field information of three and visited dates were described below.

1) Kampoeng Wisata Cinangneng (19th Aug)

A village opened for tourists to give opportunities to know the lives of Sundanese. In Kampoeng Wisata Cinangneng, tourists can experience agricultural activities such as planting paddy, washing buffalos and cooking traditional snacks.

2) Cikasungka (20th Aug)

Cikasungka is a company which has Oil palm field about 3500 ha huge. In this area, there is not only an oil palm field, but a factory for extraction and purification of palm oil from oil palm fruits, it makes the company high-efficiency in their industry.

3) PT. Sari Rejo Bumi Unit Tapos (21st Aug)

A field where is conducted dairy farming mainly. Several plants such as sorghum and tomato are cultivated in near dairy farming areas at the same time.

<Discussion and Literature review >

After visiting, we discuss what was sustainability in each field was and gathered information for our discussion from the internet.

Result and Discussion

The visiting and interviewing describe several similar points in their agriculture. The characteristics of 3 area and their role in sustainable agriculture were summarized and discussed as below.

1. Circular agriculture

As shown in 3 points: 1) utilization of waste 2) utilization of animals in cultivation 3) cultivation of a variety of plants, circular agriculture seemed characteristic in all areas. The image of circular agriculture were described in Fig 2.

1) Utilization of waste

Wastes of agricultural biomass were transformed into composts or energy. In the case of Cikasungka, a large amount of leaves and stems of oil palm were cut down as wastes on the occasion of harvesting fruits. To eliminate the wastes, farmers in Cikasungka tried to transform them into composts. In the same way as Cikasungka, animal excrement the major waste in PT. Sari Rejo Bumi Unit Tapos were transformed into composts of plants which were cultivated in fields near the cow shed. In the other case of PT. Sari Rejo Bumi Unit Tapos, wastes of

2. To offer employments

In Indonesia, farming is one of the important sources of income even if the farmers tend to decrease in young generation similar to Japan. The 3 areas have been turned into companies and industrialization to establish employment system. The industrialization of agriculture that have been private occupation before allows to support agriculture in several points of view e.g. handing down experiences, protection of employees from the health and the commodification of crops and livestock products, which give stable economic activities. Hence, the industrialization contributes increasing the number of farmers and economic ability, which enable to implement sustainable agriculture.

3. Playing an important role as a base of agricultural knowledges

Owing to rapid population growth and decreasing of farmers cause the food problem in Indonesia, it is important to propel dietary education and agricultural technology for promoting their agriculture.

The agrotour is held in Kampoeng Wisata Cinangneng and Cikasungka and it is the important role to purvey a place for education for visitors. In addition, to habitually gain new technology and information from surrounding university and test those in both areas produce material effects on agriculture. To sum up, agritourism become an important role as a center of agricultural knowledges.

Conclusion

Commonly, “sustainability” is defined as a realization of recycling society from standpoints of ecology, economy, and social. How about in the case of agricultural sustainability? From 3 area we visited, though there are 3 different types of agriculture were performed, it seemed that they aimed at sustainable agriculture: circular agriculture for sustainable ecology, an offer employments for sustainable economy and a base of agricultural knowledge for sustainable social. That is to say, it is also important to consider sustainability from the 3 point of view in agriculture. However, we have to consider 3 aspects not separately but together for support sustainable cycle each other (Fig3). Eventually, we concluded that to keep the balance of 3 aspects is very sustainable.

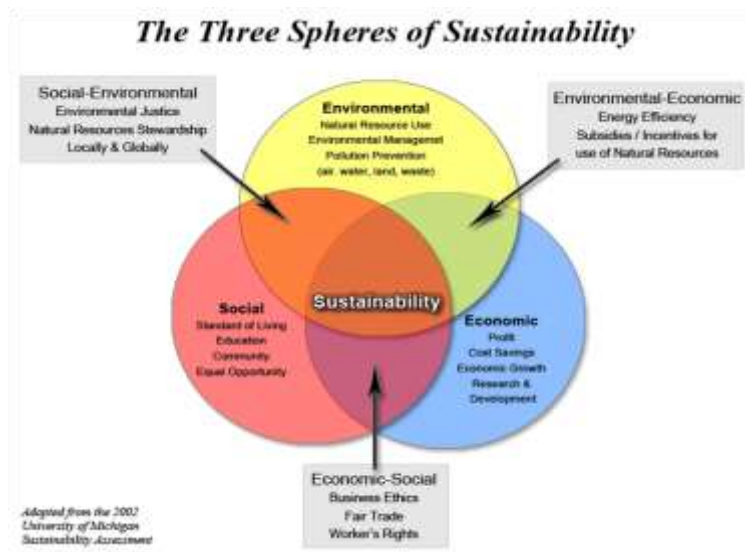


Fig 3. The relationship of 3 aspect in sustainability.

Reference

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