

Strategy to develop the organic farming system based on farmer perception and knowledge in Pagelaran Malang East Java Indonesia

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Abstract- Organic farming systems in Malang are still limited to areas that have an area of less than 1% of the total area of existing rice fields. This study aims to reveal farmers' perceptions of organic farming systems and formulate strategies for developing organic farming systems based on farmer perception and knowledge in Pagelaran Malang East Java Indonesia. This research was conducted in Kademangan village, Pagelaran Subdistrict, Malang District, East Java, Indonesia. Data collection techniques used is through direct observation of farming system, interviews and filling out a list of questions. A series of deep interviews was conducted in order to identify knowledge and attitude of farmer on organic farming system. The interviews were conducted with five key persons, including staff of agriculture office, and farmers. Result revealed that in general, farmers know that the use of chemical pesticides and fertilizers is harmful to agricultural land and non-target organisms, but they still

maintain this because they are considered practical. The reason farmers do not practice organic farming systems because the conventional system that they have practiced so far is very easy. Fertilizers and pesticides needed are always available. The marketing of its products is not difficult. The knowledge of farmers about the organic farming system is actually enough. The development strategy that needs to be carried out is the sustainable development of farmers and the improvement of cooperation with other farmer groups that have implemented organic farming systems as well as with other stakeholders.

Key words- biodiversity, collaboration, organic farming, Malang, small farmer, strategy.

I. INTRODUCTION

For centuries, traditional farmers have developed diverse and locally adapted agricultural systems, managing them with ingenious practices that often result in both community food security and the conservation of agrobiodiversity. However, since the revolution began in the agricultural system, which was generally dominated by conventional approaches, ingenious practices began to be abandoned. Agroecosystem rice that is processed with conventional systems generally has low flora and fauna diversity, and causes several environmental problems. Insect pests are a major problem in rice farming from planting to harvest.

Agricultural systems that have been implemented with a green revolution approach have reduced soil quality, increased erosion, reduced biodiversity, created habitat destruction, and triggered deforestation [1]. One effort to overcome this problem is to implement an organic rice farming system by returning to ingenious practices. This system is characterized by the use of organic fertilizers and pesticides; avoid using germ-modified organisms; and efforts to improve biodiversity to maintain ecosystem balance [2]).

Sustainability of organic farming cannot be separated from the environmental, social and economic dimensions. Organic farming is not enough to eliminate the use of synthetic inputs, but also more importantly the sustainable use of local natural resources [3]. Economic aspects can be sustainable if agricultural production is able to meet the needs and provide sufficient income for farmers. But, often the economic motivation is the driving force in the direction of development organic agriculture. Awareness of the dangers caused by the use of chemicals synthetic in agriculture makes organic farming attract good attention at the level producers and consumers. Most consumers will choose foods that are safe for health and environmentally friendly, thus encouraging the increasing demand for organic products [4].

II. MATERIAL AND METHOD

This research was conducted in Kademangan village, Pagelaran Subdistrict, Malang District, East Java, Indonesia. Distance of research location with capital of Malang District is about 12 km. Data collection techniques used are through direct observation of farming system, interviews and filling out a list of questions. A series of deep interviews was conducted in order to identify

knowledge and attitude of farmer on organic farming system. The interviews were conducted with five key persons, four men and a women. The selected informants were those who have knowledge, experience, in the paddy field farming system. With the knowledge criteria of the culture in which they live. The selected key persons were sub-village chief, two farmers, a worker woman and staff of Malang District Agriculture Office. Test the validity of data was done by triangulation of sources and triangulation method. Data analysis was done by interactive data model analysis. The result was analyzed by a series of scientific selection, as follows: sorting, organizing and data condensation. Further, the data were grouped, interpreted and concluded. Data condensation is an analysis of collected data in order to sort through, classify, remove unnecessary and organize data. Condensation data also means grouping data in their respective places, so that conclusions can be made. A focus group discussion was adopted to clarify the strategy based on the stakeholder participation. The duration of the discussion was 90 minutes.

III. RESULT AND DISCUSSION

This study revealed that the coaching system by government official carries out in general content of agriculture system. Sub-village chief said that

"The government is not doing guidance on organic farming systems. Guidance by field instructors is related to general topics, such as irrigation, pest control."

Special guidance on organic farming systems has never been done. This is because the organic farming system is an option, not yet a systematic regional or national program. This was conveyed by agriculture office staff.

"Since 2010 the central government has begun to launch policy policies on the development of organic agriculture such as 'Go Organic 2010'. The poor regional government itself strongly supports the policy and wants to be a center for the development of organic rice. However, in terms of organic land area in the the organic area is considered small because covering less than 1%. This causes the coaching pattern that is carried out is still localized in certain regions. "

To develop organic farming systems, the use of chemical pesticides and fertilizers must be avoided. Generally, farmers know that the use of chemical pesticides and fertilizers is harmful to agricultural land and non-target organisms, but they still maintain this because they are considered practical. This is said by farmer A.

"We know that pesticides and chemical fertilizers can have a negative impact on the quality of soil and other animals. But farmers still practice it. This is because it's easy to get it, it's practical to use and there is even a subsidy from the government. "

The reason farmers do not practice organic farming systems because the conventional system that they have practiced so far is very easy. Fertilizers and pesticides needed are always available. The marketing of its products is not difficult. This was stated by farmer C.

"We don't know where to market products, if we apply organic farming systems."

This was also supported by a statement from agriculture office staff.

"The constraints of developing organic farming systems are generally caused by high prices so that they are not affordable to consumers and the certification process and costs are still quite expensive."

The use of manure or compost is actually done by farmers in sufficient quantities. Farmer B stated that

"Many farmers still use manure. Usually cow or goat feces that have accumulated long ago are brought to the rice fields. We have never made organic fertilizer specifically, meaning that farmers just leave the dirt piled up for several months."

Farmers' knowledge of the organic farming system is actually enough. Farmer C stated that

"We have heard information about organic farming systems. But it has not been practiced because farmers are still implementing intensive systems. Intensive system produces high productivity."

Farmers generally do not know that organic farming has many benefits. Farmer D stated that

"We do not know if the results of organic farming are healthier, we think the quality is the same."

This situation is caused by various constraints including market constraints, interests consumers and understanding of organic products, the certification process is in consider weight by small farmers, farmer organizations and partnership with farmers and entrepreneurs. But the interest in farming towards organic farming has grown. This is expected to have a positive impact on the development of organic farming [5].

Strategy developed

There are strengths included awareness that intensive farming systems have a negative impact and the existence of farmer groups that have good cooperation. The weaknesses were dependence on pesticides and fertilizers from government subsidies and farmer already used to implementing a farming system and poor understanding of the benefits of organic farming. The opportunities were customer demand is increasing and collaboration with other farmer groups that have implemented organic farming systems. While the threats consisted of costly certification fees and the marketing system is still difficult (Table 1). Based on the SWOT analysis this study proposed two strategies consisted of the development strategy that needs to be carried out is the sustainable development of farmers and the improvement of cooperation with other farmer groups that have implemented organic farming systems as well as with other stakeholders.

Table 1. Analysis of strengths, weaknesses, opportunities and threat

Strengths Awareness that intensive farming systems have a negative impact The existence of farmer groups that have good cooperation
Weakness Dependence on pesticides and fertilizers from government subsidies Already used to implementing a farming system Poor understanding of the benefits of organic farming
Opportunity Customer demand is increasing Collaboration with other farmer groups that have implemented organic farming systems
Threat Costly certification fees The marketing system is still difficult

Sustainable development of farmers

Guidance for farmers to get to know the organic farming system must be carried out sustainably. The guidance system is carried out through groups, with some farmers who are pioneers. This must involve all parties including from universities, and research institutions. Generally farmers are lacking in the initiative to initiate a change. They tend to wait for the success of other farmers, and then are willing to imitate it. Therefore, with an intensive and sustainable coaching system, the pioneers are expected to succeed, so that the best practices that have been implemented can be replicated by other farmers. In addition, the government also needs to facilitate certification efforts because this is often complained by organic farming groups. The form of government support is helping to monitor and evaluate and look for links to funding support in the certification process.

The second focus of guidance is the skills of farmers in carrying out the cultivation of organic farming systems. There are actually farmers who apply the characteristics of organic farming, but their understanding of the organic farming system itself is still lacking, so efforts need to continue to be encouraged to increase the knowledge and skills of farmers in processing organic fertilizers independently, identify types of pests and natural enemies, and maintain diversity, living in an agricultural environment.

Increased collaboration with other farmer groups that have implemented organic farming systems as well as with other stakeholders

Increasing the deep cooperation with other farmer groups must be implemented organic farming systems as well as with other stakeholders needs to be continued. This increase in cooperation includes the transfer of best practices and cooperation in the marketing of products for example with cooperatives. Furthermore, through this collaboration it is necessary to increase the role of all parties to support the success of organic farming systems by increasing efforts to introduce organic agricultural products to the community through various events including exhibitions and competitions. At present the thematic village is very popular with the community. Because of this, the introduction of the organic farming system theme also needs to be encouraged so that the

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community can support the implementation of this organic farming system.

The strategy of developing organic farming cannot be separated from efforts to increase the role of experts with farmers in developing sustainable agricultural systems. Efforts include the preservation of traditional agricultural knowledge already owned by farmers, increased utilization of local and animal plant varieties, and original forms of socio-cultural organizations. By studying this system, farmers' knowledge of complex system dynamics, especially the relationship between biodiversity and ecosystem functions and practical principles for a more sustainable agroecosystem design that is suitable for smallholders [3].

Diversity can maintain and increase soil fertility and mitigate the impact of pests and diseases. Diversity of diet, founded on diverse farming systems, delivers better nutrition and greater health, with additional benefits for human productivity and livelihoods. Many of the benefits of agricultural biodiversity are manifested at different ecological and human scales, and cut across political divisions, requiring a cross-sector approach to reassess the role of agricultural biodiversity in sustainable and secure food production [6].

Case studies from Cuba, Brazil, the Philippines and Africa are presented to show how the agroecological development paradigm based on small agricultural revitalization that emphasizes diversity, synergy, recycling and integration, and social processes that value community participation and empowerment, are proven to be the only choices can meet current and future food needs [7].

The synergies that exist between organic agriculture and sustainable rural development, through a special analytical framework built on the implicit assumption that modern and dynamic and multifaceted organic farming systems are 'hybrid and composite networks', can be analyzed according to evolutionary perspectives and analytical approaches network. This work identifies the four main points of communality between organic agriculture and sustainable rural development: innovation, conservation, participation and integration [8].

IV. CONCLUSION

Result revealed that in general, farmers know that the use of chemical pesticides and fertilizers is harmful to agricultural land and non-target organisms, but they still maintain this because they are considered practical. The reason farmers do not practice organic farming systems because the conventional system that they have practiced so far is very easy. Fertilizers and pesticides needed are always available. The marketing of its products is not difficult. The knowledge of farmers about the organic farming system is actually enough. The development strategy that needs to be carried out is the sustainable development of farmers and the improvement of cooperation with other farmer groups that have implemented organic farming systems as well as with other stakeholders

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