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Multifunctional Rice Farmings as the Main Commodity in Sawahan Village, Boyolali, Regency

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ABSTRACT. Along with the progress of the times, Sawahan village experienced conversion of paddy fields into residential, industrial, and toll roads. The strategic role of rice production continues to shift, especially productive rice fields, because increasing population growth and development dynamics make the function of agricultural land that was originally for growing crops converted into multipurpose land. Low awareness of the existence of rice fields that need to be maintained is one of the factors that need to be focused now. Farmers in Sawahan village still focus on rice as the main commodity of agricultural crops in Sawahan village but pay less attention to environmental, social, and cultural aspects. This study aims to identify multifunctional rice farming in Sawahan Village, Boyolali regency. The method used is descriptive qualitative by using primary and secondary data sources obtained from interviews and literature studies. The results of this study is the identification of multifunctional agriculture in Sawahan Village and strategies that can be done in maintaining multifunctional agriculture. It can be concluded that the multifunctional Agriculture of Sawahan village includes the empowerment of Water Resources, one of the efforts in improving the local climate, efforts to reduce organic waste, as a habitat for flora and fauna, a container in providing jobs, and a factor in maintaining family and regional food security. Multifunctional agriculture and agricultural land Sawahan village is maintained by improving the image of Agriculture in the community, improving agricultural policy, appreciation of agricultural multifunctionality, and increasing agricultural land conservation efforts.

Keywords: agriculture, farming, function, multifunction, rice.

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1. Introduction

Central Java province has an important role as a food barn. This is supported by data from the Central Statistics Agency which states that nationally Central Java is included in the third largest rice producer in 2013 with production reaching 10.34 million tons of dry rice giling (Arnanda and Karim, 2016). Boyolali regency is one of the rice producers in Central Java. According to BPS Boyolali in 2015, rice production reached 270,809 tons. Therefore, Boyolali regency has a great opportunity to spur regional income through the agricultural sector. One of the villages in Boyolali regency is Sawahan Village. The area of this village still consists mostly of fertile rice paddy fields. The food sector in the form of paddy rice is the main commodity in Sawahan Village which is of strategic value. This is because the resulting rice production is not only a staple food, but also has a high political, economic, and social sensitivity (Mamondol, 2017). However, Sawahan village also experienced the conversion of rice fields into housing, shops, or toll roads. Based on existing land use data, it is known that more than 60% of land use around the Boyolali regency toll road is irrigated rice fields that function other than producing basic foodstuffs can also function as catchment areas (Rochani, 2015).

The strategic role of rice production is now shifting, especially productive rice fields, where increasing population growth and development dynamics make the function of agricultural land that was originally for growing crops converted into multipurpose land (Ahmadian et al., 2021). However, the increasing number of population resulted in increased food needs, as well as requiring extensive agricultural land. Given, rice as a commodity producing rice is the staple food of Indonesian society. Whereas on the other hand agricultural land resources are limited in number (Sularno and Jauhari, 2014). Land conversion is essentially now a normal thing when associated with the development of a region. However, in fact it has many negative impacts because it occurs in productive agricultural land which is beneficial both in terms of economic, social, and environmental. If the conversion of agricultural land is not handled, then it will certainly bring problems in the future. Therefore, the need for conservation of agricultural land with the aim to preserve the environment and minimize the occurrence of disasters (Sudarwani and Ekaputra, 2014).

Based on interviews in the initial survey, farmers in Sawahan village do not understand the concept of sustainability of paddy fields, and there is still low awareness of the existence of paddy fields that need to be maintained. The assumption of people who still think rice fields are only a producer of rice products and tend to ignore other functions of

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rice fields such as environmental, economic, social, and cultural aspects. This is for example rice farming has a multifunctional environmental services as a producer of rice food, as flood mitigation, food security buffer, providing jobs, creating the beauty of the natural panorama of the countryside, and others (Mukhoriyah, 2012). Therefore, this study aims to identify the multifunction of rice farming in Sawahan Village, Boyolali regency.

2. Materials and Methods

2.1 Methods

Data collection is done by observation and interview techniques to the villagers Sawahan. Interview was conducted to selected informants using purposive sampling technique. Purposive sampling technique is a sampling technique based on considerations that focus on a specific goal (Utami *et al.*, 2021). In addition, data were also obtained from secondary data or literature studies that support this research. Secondary Data is a type of data obtained from a reference that is the same as what the researcher is researching (Sari and Zefri, 2019).

The data analysis method used in this study is descriptive qualitative. This method is intended to describe phenomena both natural and human engineering by paying more attention to the characteristics, quality, and interrelationships between activities (Utami *et al*., 2021).

2.2 Region Research

The study was conducted in July 2022 and was located in Sawahan Village, Ngemplak District, Boyolali regency, Central Java. Based on BPS data in 2020, the area of Sawahan Village is about 2.66 km2 with a male population of 5,753 people, and 5,684 women.

3. Result and Discussion

3.1 Multifunctional Agriculture Concept

Agriculture is a field of activity that utilizes natural resources both water and soil to be used as other raw materials and/or energy sources to increase productivity. This activity has long been applied by Indonesia since the 1960s through the green revolution at that time. From ancient times until now, Indonesian Agriculture still mostly uses conventional concepts. If not controlled in the exploitation of natural resources, it is not possible that non-renewable energy sources will be depleted and depleted. Farmers will depend on the use of superior seeds, chemical pesticides, and fertilizers that can damage the soil as well as the environment. The decline in crop productivity will also decrease and agricultural activities are feared to be difficult to sustain in the current era of industry (Mamondol and Silvany, 2015).

Supplies of non-renewable materials over time will decrease and make prices rise high which also affects the agricultural sector. Awareness of rural communities dominated by working in agriculture began to be aware of the use of non-renewable sources will damage the environment (Spataru *et al*., 2020). This makes farmers switch to applying alternative agricultural technologies that are environmentally friendly. The use of organic materials that are processed sedimikian way can make the quality of Agriculture for the better and the environment clean from danger.

In the era of Industry 4.0 now, it is not surprising that many infrastructure built in all places do not escape in the countryside. The location of the village has begun and is being lyricized by stakeholders as an industrial area because it has a large and still natural land. The sustainability of Agriculture will be eroded if this happens (Yu *et al*., 2019). This phenomenon is supported by the declining interest of today's young generation who pay less attention and want to work in the agricultural sector even though Indonesia is an agrarian country. More of them are willing to work in industries whose income cannot be compared with the agricultural sector. Conversion or conversion of rice fields into industrial functions is increasing in number. The phenomenon of land conservation will continue to occur as a result of the increasing needs of human life for space for housing development and making land as an alternative way to meet practical economic needs (Karini, 2013). The area of rice fields in Indonesia will also be affected will be reduced greatly so that it is feared will threaten national food security (Mulyani *et al*, 2016).

Rice fields are communally faced with businesses that produce food and board. Whereas rice fields can be widely used for various purposes and services such as empowerment of Water Resources, culture, reducing organic waste, diversity of fauna and fauna, and so on. Agricultural land today must be viewed in the fields of environmental, cultural, social and Economic so that the assessment of the community will increase the accent of this sector. This is the so-called concept of multifunctional rice fields that can be applied in the current rice sector conversion environment. Environmental services provided in multifunctional rice fields should not be underestimated, because this also supports the SDGs goals in addressing global warming. In addition, multifunctional rice fields are also fields of new jobs, preservation of rural culture and national food security.

Multifunction farm there may be invisible in real and direct. But the contribution behind it is very much and of great benefit to society and the environment. The results of land multifunctionality have been enjoyed by the surrounding community, only often not realized. A change in mindset in seeing rice fields widely and all aspects must be related to each other. That way the concept of multifunctional agriculture can be applied in the current era of development. Indicators of threats to agricultural land that can be seen is the declining interest of the younger generation to work in the agricultural sector because it is more interested in working in other sectors that provide greater income, rural youth who are looking for work in other sectors in urban areas, and the increasing conversion of agricultural land to non-agricultural activities (Land Research Institute, 2006).

3.2 Sawahan Village Community Perception Related To Multifunction Rice Farming

Rice fields with technical and semi-technical irrigation irrigation patterns are mostly found on the island of Java, one of which is in Sawahan Village. Rice fields are a major mainstay for the national food supply because the national flavor production is relatively high compared to other land types (Juhadi, 2007). According to an interview with one of the members of the Sawahan village farming community, Mr. Kardiyatmo Suwito, the focus of rice crops as the main commodity of Sawahan village has not been replaced. The majority of Sawahan village farmers only rely on rice commodities as crops in their rice fields. The majority of farmers consider that only reliable rice crops to be grown in the

Sawahan Village area. Perhaps the various factors into consideration of farmers such as soil model, water, and so forth. Based on interviews with related informants, it was found that the community towards the multifunctionality of agricultural land in general is still focused on direct benefits, especially its function as a provider of food and employment opportunities. This fact indicates that in general the public's understanding of other benefits of paddy fields other than direct benefits has not been fully realized so that it has implications for the increasingly difficult efforts to control the conversion of paddy fields to non-agricultural uses (Prasada and Rosa, 2018).

3.3 Agricultural Functions in Sawahan Village

a. Empowerment Of Water Resources

Paddy fields in Sawahan Village generally use irrigation from irrigation and weather from rainwater. This irrigation is useful for draining water regularly and can be recycled after disposal. Sawahan village rice fields that use irrigation flow make their productivity level more than once a year. Meanwhile, non-irrigated rice fields can only produce if there is sufficient rainfall (Mulyani *et al.,* 2020). Calculated from the total potential of these water resources, only about 20 percent have been utilized while about 80 percent have not been utilized. Of the water that can be utilized, about 20 percent is used to meet the raw water needs of households, cities and industries, the other 80 percent is used to meet irrigation needs (Hartoyo, 2010). In addition to being used for rice fields, it is also used as a source of water for industry, households, and environmental activities (Handayani *et al*., 2018). The Minister of Agriculture emphasized that the Ministry of Agriculture is focusing on optimizing the use of water resources to irrigate rice fields that are not irrigated 50 percent of the raw rice field area and irrigate rain-fed rice fields and dry land to increase national food production (Sutrisno and Hamdani, 2019).

b. Improving The Local Climate

Global warming that is happening now does not escape the role of greenhouse gases released into the atmosphere from various sources on Earth such as the use of fossils, industry and motor vehicles that cause changes in temperature, weather, and natural disasters (Du *et al*., 2018). One that can overcome this is the planting of plants, one of which is by making paddy fields. This is because plants can absorb heat and at the same time air pollutants that cause greenhouse gases. In addition, plants also emit output in the form of oxygen to a soothing environment. In Sawahan village, around the rice farming area planted many other types of trees such as banana trees, chili, papaya, corn, and so forth. These plants can not only absorb emissions but also become foodstuffs.

c. Reduce The Accumulation of Organic Waste

There are many cases of waste problems in urban areas, residential areas, and in rural areas. This waste can come from various sources such as household and industrial waste. Household waste that we often encounter around includes organic and inorganic waste. In Sawahan village has made initiatives to process organic waste into something more useful such as the manufacture of liquid organic fertilizer (POC). Waste management business into organic fertilizer is very potential to be developed considering the composition of domestic waste in Indonesia is very large (Siahaan *et al*., 2019). Initiatives from the Sawahan Village community are increasingly efficient because they are carried out from the smallest scale, namely the scale of households and villages. The agricultural sector in Sawahan Village is the main medium in the application of POC because it is the main commodity there. This liquid organic fertilizer is very beneficial for agricultural land because it can repel rat pests in rice fields and produce quality products (Masluki *et al*., 2016).

d. Habitat Flora and Fauna

Animal ecosystems in Sawahan village there are several types of flora and fauna such as rice, large protected trees, various types of small rice-eating birds, snakes, mice and small aquatic animals such as eels, snails and small fish. This shows that rice farming in Sawahan village has a healthy ecosystem because it is seen from the parameters of welfare, wealth, and abundance of flora, fauna, predators, and ecosystem services around it (Fauziah, 2019). A healthy ecosystem is an ecosystem that is in severe conditions, able to produce resources and manage the flow of nutrients needed, and able to face and have the power to recover from outside pressures (Costanza and Mageau, 1999).

e. Provide Employment Opportunities

According to information from an interview with a member of the Sawahan village farming community, Mr. Kardiyatmo Suwito, the job field that absorbs the most workers in Sawahan Village is agriculture. Employment in the agricultural sector is the ability of the agricultural sector in attracting Labor used in carrying out the production process (Safangatun, 2011). Agriculture can reduce unemployment because managing agriculture requires various elements of human resources that support, ranging from the production of fertilizers and seeds, land processors, harvesters, grinders and rice collectors (Kumendong *et al.,* 2021). Although the world of Agriculture is considered less attractive to the younger generation, it still becomes a savior for some groups that really need it. It takes innovation and renewable technology in agricultural land management so that it can attract the younger generation to plunge into the world of Agriculture. So it is expected to be a new breakthrough for the world of Agriculture to be more effective and efficient.

f. Supporting Family and Regional Food Security

Rice farming system can provide guarantees for every household and region to enjoy the fulfillment of food needs, in this case the basic food needs in the form of rice. Rice is a staple food for more than 95 percent of Indonesian people (Ramli, 2010). Food can be interpreted in general and specifically, in general food is agricultural production in the food crop sub-sector, specifically food is grain crops including rice, corn, wheat and sorghum (Hui, 2013) rice fields in the Sawahan Village area are dominated by rice cultivation as the main commodity. Agricultural products in the form of rice is a strategic political commodity that became a benchmark of food availability in Indonesia. Food security is focused on the balance between the population of an area and the availability of food, where the availability should not be lower than the population growth rate (Burchi and De Muro, 2016).

g. Strategy Of Maintaining Multifunctionality Of Agriculture

The strategy that can be done by the community in maintaining the multifunctionality of Agriculture in Sawahan Village is to first improve the image of Agriculture and farming communities. The image of Agriculture that is less profitable and has a lot of risk of loss needs to be transformed into a promising agribusiness for farmers. Second, the strategy that can be done is to improve agricultural policy. This strategy is

done because the agricultural policy is notabenenya too cheap, so by increasing the price of agricultural products in accordance with the sacrifice of farmers, the dignity of farmers will continue to increase. The third is to increase the appreciation of multifunctional agriculture through various seminars conducted by academics and extensive promotions such as through the mass media. The fourth strategy is to increase agricultural land conservation efforts. Strategies can be carried out by conducting various counseling to farmers in increasing the willingness and ability of farmers to apply conservation technologies needed today. This strategy is also carried out by controlling soil pollution through the use of chemical fertilizers that meet government regulatory standards.

4. Conclusion

Based on the results of our research, it can be concluded that the knowledge and insight of farmers in Sawahan Village, Ngemplak District, Boyolali regency about multifunctional agriculture is still low. Farmers in Sawahan village still focus on rice as the main commodity of agricultural crops in Sawahan village but pay less attention to environmental, social, and cultural aspects. Multifunctional agriculture in Sawahan village can include as empowerment of water resources, as one of the efforts in improving the local climate, as an effort to reduce organic waste, as a habitat for flora and fauna, as a container in providing jobs, and as a factor in maintaining family and regional food security. The change of land from rice fields to other functions is a big threat, because Sawahan village is passed by the Solo-Kertosono toll road, the construction of which consumes Sawahan village rice fields. The strategy that can be done in maintaining the multifunctionality of Agriculture and agricultural land in Sawahan Village is to improve the image of Agriculture in the community, improve agricultural policy, appreciation of agricultural multifunctionality, and increase efforts to concentrate agricultural land.

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