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The existence of rice fields in Makassar City

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Abstract. Farming land is a part of functional cultivation land. The existence considers necessary to support food security, due to fulfil the regional needs and trading. Along with the growing population, its existence threatened by other interests such as real estate, industry, etc. [1]. Farming land is strategic and has an important role in the nation's economy and sustainability, especially in creating jobs and serving food domestically. This study aims to know the existence of rice fields in Makassar City. The data used in this study are primary and secondary, using the quantitative descriptive method. The result shows that the existence of rice fields is still available with a total land area of 2.636 ha, and it remains used by people.

1. Introduction

The use of land has always been dynamic and developing along with the population's growth. It causes land shifting due to make living houses, for farming, non-farming land, and others. The land is a complex research object and consider can't stand alone, but interaction with its biophysics surrounding. Success in increasing agriculture production depends on its planning of land using and competency [2].

The use of land as a strategic and necessary asset to the nation's economy and to keep a sustainability living, especially to create new jobs and to provide food domestically. People are still aware of the agricultural sector's potential, even though the government has shifted its focus to the industrial sector. Align with this, controlling the farming land is one of the nation's strategic policies to preserve the primary agriculture industry and food served capacity linked to preventing the long term social-economic losses.

According to Smith [3], urban farming is a cultivation activity, processing, marketing, and distributing food, wood products, and horticulture that happened in and around the city. The difference between urban and rural farming is not only caused by access to resources or lands but also caused by the impact of industrialization and urbanization. Based on the Ricardian theory about rent, von Thunen stated that urbanization could determine the production base to some of the agricultural products, technology, and plantation intensities. Schultz then developed a hypothesis that whereas industry in developing cities is ⁴faster than its market, the production's factor and agricultural product will efficiently function [4,5].



The urban agricultural concept for Asia assumed to come from Shanghai, China. As one of the big cities that keep continuing to develop, Shanghai remains to preserve its urban farming practices as their economic system to support the city's development. Nevertheless, the development region of agriculture is shifting to the city's edges because of the massively built housing and office building [6]. Farming practice, especially in the middle of the city, has its challenges, start from the land resources, plantation media, climate, social and cultural environment. Besides, the urban farmer's capability in processing their prospectus land, and other factors whose influence their existence is nothing but their choice. The tenacity and perseverance of farmers in changing existing conditions is one manifestation of a strong will to do business [7].

To maintain the urban farming practices is important in developing agriculture. However, this could not be easy because it needs the government's willingness and also the involvement of urban farmers and citizens. From development and infrastructure aspects, Makassar City is categorized as one of the big cities in Indonesia outside Java after Medan, with a total area of 199.26 km² and populated by more than 1.6 million people. This city considered have variances of ethnicity, such as Bugis, Toraja, Manda, Buton, Java, and Chinese. It also plays as the center of trades and loading goods, industrial practices, the government, also education and health services. With those varieties, the agriculture sector still potentially fulfil the needs of food in the city. So it remains to be maintained even the land area keeps decreasing, caused by its strategic and ecology conservation due to preserving the balance of the ecosystem.

The total land area of rice fields in Makassar in 2011 is 2.718 Ha. It kept decreases, and it will impact the decline of local rice's demand in Makassar, while the demand for food in Makassar remains to arise. Based on the explanation above, this study aims to identify the existence of rice fields in Makassar City.

2. Methodology

This study conducted in Makassar, South Sulawesi Province, focusing on four sub-districts, i.e., Manggala, Biringkanaya, Tamalanrea, and Template. These have chosen purposively with a consideration that the active rice fields are mostly located in those locations. The data is collected from few institutions such as the Department of Marine, Fisheries, and Agriculture of Makassar, Centre of Statistics Bureau at the province level, and BAPPEDA Makassar. Descriptive research aims to describe the symptoms and events that happen during the conducted research.

The descriptive method used to solve and answer the happening problem in the present and plan to take steps of collecting, classifying, and analyzing or processing data, formulating conclusions and reports, with the ultimate goal is to depict a situation into a description, objectively. Afterward, a quantitative approach is a method in research to measure research variable indicators, so then it obtains the relationship between those variables. The aim of the quantitative approach is to measure a preferable research dimension.

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3. Results and discussion

3.1. The physical existence of rice fields

The existence of rice fields in Makassar can be measure physically from several aspects, which are land area, the number of farmers, and climate compatibility with the prospectus commodity. Based on previous data, the availability of rice fields in Makassar remains to exist physically. With the total area 2,636 Ha, it can be a great potential to fulfil the needs of food for most of the citizen. To support the existence of rice fields in Makassar, the number of farmers who process and utilize the fields also consider necessary. Table 1 shows the total area of rice fields and farmer's quantity focused on those 4 locations.

Table 1. The total area of rice fields and a number of farmers in Makassar, 2017.

Sub-district	Land area (Ha)		Total (Ha)	Farmers in total (person)
	Irrigation	Dry Fields		
Manggala	670	131	801	714
Biringkanaya	205	434	639	405
Tamalanrea	-	632	632	393
Tamalate	375	134	509	396
Total	1,250	1,331	2,581	1,908

Source: Primary data, 2019.

The total area of rice fields in focused location is 2,581 Ha with a number of farmers is 1,908 person, whereas the biggest rice field located in Manggala Sub-district owning 801 Ha of rice field and amount of farmers is 714 people and the least is located in Tamalate Sub-district with the area of the field is 509 Ha and lived by 396 farmers.

To optimize the land area, the government should support urban farmers to increase their production and productivity of paddy through intensification program, that is doing innovative cultivation without having to expand the land area. The incline productivity expected to give contribution to boosting farmer's income, although the land area remains to get narrowed.

The physical factor that influences the use of land is several factors that relate to land compatibility, which consist of directly and indirectly environmental factors impacting cultivation techniques or land processing and environmentally friendly. These are including climate conformity, water sources and availability of irrigation water, the shape and topography of the land, and also land characteristic, which limited the dos and don'ts practices on the farmland altogether.

The compatibility between the local climate has seen through the geographic, the temperature, and the altitude of the plantation. Based on the data from the Statistics [8], geographic and climate conditions in Makassar is having 28 °C average temperature and the average humidity ranging from 1-25 meters with the average sunlit for 64%. Paddy could grow better amid the average temperature of 27 °C- 32 °C with humidity level on 80-85%. With this kind of condition, paddy to grow in Makassar is quite fertile, with its total production greater than any commodities. Even in some locations, farmers are planting chili, corn, cassava, and green beans beside paddy.

3.2. Existence of rice fields in the form of land use

Land use can be grouped one of them in the form of agricultural land use, which is distinguished based on the supply of water and cultivated commodities or types of plants found on the land such as drylands, rice fields, gardens and so on.

Makassar is currently experiencing rapid development year-on-year, so that land use in Makassar City has changed according to its function. Land farming is not only used to grow rice, but there are also other cultivated crops. Rice field area in Makassar City has a percentage of the total land area that is quite large at 15%. The number is third after land use for the yard and other lands. This land-use is one of the supporters of the existence of rice farming land in Makassar City.

The government should formulate a regulation about the protection of land farm use, which will form in a Major's Regulation to support its existence. This has suggested by the BAPPEDA as the authorized institution in verifying each of SKPD activity in Makassar.

The draft regulation made by DKP2 Makassar City has been followed up by BAPPEDA, but before designing the policy in the form of Mayor Regulation (Perwali), the relevant Regional Work Unit (SKPD) must make a draft budget, then it will be processed by BAPPEDA after it is approved then it will be prepared in a guardian form that protects rice farming in Makassar City.

Before the existence of regulations to be made by the Makassar City Government, there were already government regulations in order to support food security. Agricultural land supply policies have so far been more focused on two efforts, which are (1) controlling the conversion of paddy fields, and (2) expanding paddy fields to offset the reduction in paddy fields due to land conversion. Considering the important role of paddy fields in rice production various regulations have been issued by the government to prevent the conversion of paddy land to non-agricultural uses, especially technical irrigated paddy fields. However, the various regulations seemed ineffective, so the government finally issued RI Law No. 41 of 2009 concerning the Protection of Sustainable Food Agriculture Land. In the implementation of this Law, each regency/city must determine the area of sustainable food-producing agricultural land, which is agricultural land that is protected and developed to produce staple food. In addition, each regency/city must also preserve and protect agricultural land that has the potential to be developed into sustainable food-producing agricultural land. However, in its implementation, the determination of sustainable food-producing agricultural land areas has not been done much by districts/cities due to various problems.

The government is involved in maintaining and maintaining the existing rice farming land by providing assistance to farmers so that they are able to increase the productivity of rice fields in the city of Makassar, as well as building agricultural infrastructure needed by farmers. Another thing that is done by the government is to make routine visitation activities by extension agents and meetings attended by each farmer group representative, to provide socialization to farmers about the importance of agricultural land that they have to continue to use. Apart from the government, Makassar City as one of the largest cities and still has agricultural land, especially rice, which is supported by farmers who still use the existing land. The existence of paddy fields in Makassar City is generally located in suburban areas that are not immediately visible. However, physically this land is still well managed by farmers.

Physically and from the form of land use by the community, the existence of rice farming land in Makassar City is still potential and continues to be utilized until now. However, the rate of population growth in Makassar City is increasing rapidly; this has an impact on the increasing need for settlements so that the land that was used for farming has changed its function to become residential land and cause agricultural land to decrease or narrow. The area of land in Makassar City decreases every year, not only due to the high rate of settlement construction, but also the number of industrial developments. Investors who open factories in Makassar City buy land at high prices, so farmers are tempted to sell their land, which results in decreasing agricultural land area.

With this condition, it will threaten the existence of rice farming land in Makassar City, which continues to decrease. So that the government has an important role in assisting farmers in maintaining their land and supporting the existence of agricultural land, especially rice in the city of Makassar.

Research conducted by Munjinadir [9] states that the factors that influence the existence of urban agricultural land are land area, ownership status, and land use. Whereas in Makassar City, the factors that support the existence of paddy farming land are physical factors of land that still exist by looking at the size of paddy fields and the forms of agricultural land use by the community. However, the ownership status of agricultural land in Makassar City is not of its own lands; most of it is land that has been sold and is still used by farmers to grow rice. This is a threat to the existence of agricultural land because the status of land that has been sold will certainly be easily converted. So that the existence of agricultural land in the city of Makassar will be increasingly reduced. The government made steps to prevent more and more land from being converted by issuing regulations that are still being drafted by DKP2 Makassar City and BAPPEDA Makassar City. In the future, it is hoped that this regulation will support the existence of rice farming in Makassar City.

4. Conclusion

This study results in the conclusion that the existence of rice fields in Makassar can be seen physically with a total area of rice fields is 2,636 Ha and through a form of utilization by urban farmers. The

recommendation given from this research is to ensure the city government to boost and ease farmers to access agriculture facilitations.

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