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Movement of Urban Vacant Land Use as an Effort in Keeping the Food Security in Surakarta during the Pandemic

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Abstract:
The urban farming movement has been carried out in several parts of the world, such as Havana and Detroit, which was initiated by the food or economic crisis faced by the region. Urban farming through the movement of "*Lihat Kebunku*" (Look at My Garden) by using the rest of the house yard by planting household crops. The movement of "*Lihat Kebunku*" (Look at My Garden) can be done with collaborative actions and can be carried out with many parties, from the local community, the private sector, other communities, universities, and even the government. This study reveals the potential of the urban farming movement that can support the food self-sufficiency in Indonesia if it is promoted massively. This study was conducted using the normative method by looking at data from various sources with concept research methods. The data and information collection techniques used were secondary data studies and existing concepts. The results of this study indicate that the movement of agricultural land use in the city of Surakarta can be a mobilization process that leads to efforts to ensure the growth of participation and awareness of the wider community in using the abandoned land through urban farming.

Keywords: urban farming, food self-sufficiency, Covid-19.

大流行期间城市空置土地利用的运动作为维持梭罗粮食安全的努力

摘要：
城市农业运动已经在世界多个地方开展，例如哈瓦那和底特律，这是由于该地区面临的粮食或经济危机而发起的。 通过“利哈特科文库”（看看我的花园）运动，城市农业利用剩余的庭院种植家庭作物。“利哈特科文库”（看看我的花园）运动可以通过协作行动来完成，可以与来自当地社区、私营部门、其他社区

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、大学甚至政府的多方一起开展。这项研究揭示了城市农业运动的潜力，如果大规模推广，它可以支持印度尼西亚的粮食自给自足。本研究是通过使用概念研究方法查看来自各种来源的数据，使用规范方法进行的。使用的数据和信息收集技术是二手数据研究和现有概念。这项研究的结果表明，梭罗市农业土地利用的流动可以是一个动员过程，它会导致努力确保更广泛的社区通过城市农业利用废弃土地的参与和意识的增长。

关键词：城市农业，粮食自给自足，新冠肺炎。

1. Introduction

Development in the agricultural sector is central to the welfare of the Indonesians. This is because Indonesia is an agricultural country. One of the efforts of the government to improve and increase the agricultural output is the initiation of the revitalization of agriculture, fisheries, and forestry (RPPK) in 2005. Agricultural revitalization is basically about placing back the importance of the agricultural sector proportionally and contextually, in the sense of refreshing the vitality of empowering capacities and increasing agricultural performance in the development without neglecting other sectors. The success indicators of agricultural revitalization include: (1) change in mindset and commitment in the form of support from the related stakeholders regarding the importance of the agricultural sector; (2) an increase in per capita income, a decrease in the number of poor people, an increase in the gross domestic product of agriculture, and an increase in the absorption of labor energy in the agricultural sector.

The occurrence of food insecurity can be caused by not achieving the target of food readiness and access to food for the community. This has become a paradox because Indonesia has a vast and fertile land (Ali & Purwandi, 2017). The development of food security is to achieve resilience in the field of food and fulfillment of food for each individual from the national food production, which is reflected in the availability of sufficient food, quantity, quality, safe, equitable, and affordable throughout Indonesia (Widiyarto et al., 2022). The issue of food security is crucial. Indonesia's food security has decreased since the 1998 economic crisis. Data from the UGM Research Institute in 2009 show that in 1997-2003, Indonesia had to import 2 million tons of rice per year, 900 thousand tons of soybeans, 1.6 million tons of sugar, 1 million tons of corn, and salt of 1.2 million tons. The total imports to be paid in 2003 reached 900 million US dollars.

The main challenge in the agricultural development today is the availability of land resources that are increasingly scarce, especially in the urban areas, both in area and in quality. In the agricultural production system, land is the most important factor of production. However, land resources are not only crucial for agriculture, but are also very much needed for many non-agricultural sectors (Uemura, 1986), along with the rate of population growth, which is currently very high. This will be a problem in meeting the food needs in urban areas. A similar trend also occurred in Indonesia, where the proportion of the population in urban areas was 36.5 percent in 2000, projected to increase to 44.5 percent in 2010 and 52 percent in 2020 (Chen, 2013).

The development of the urban farming movement can be a powerful tool to increase the independence of residents (Mulyaningsih et al., 2021). The urban farming movement can be used as an alternative to maintain the food security, especially for poor households (Diani & McAdam, 2003). The urban agricultural development movement has a very positive impact on the poverty alleviation and reduction and able to foster the community independence. Physically, urban agriculture needs to be improved since it contributes and benefits greatly to the provision of green open space. Urban agriculture programs can help local communities in both an economic way and a social way. They allow for people to have a more immediate connection to their food, as well as help stimulate a local economy. Urban agriculture programs such as community gardens can target young people in nontraditional agriculture backgrounds. Urban farming or urban agriculture itself is as a way to cultivate plants and/or maintain livestock in the vicinity of large/metropolitan cities or mini-cities to obtain food/other needs and additional finance, including in the processing of harvest output, marketing, and product distribution the activity's output.

Urban agriculture is an activity to increase the use of minimalist space in urban areas through the cultivation of plants, fish, or livestock, which can still be accepted by the local community. Urban agriculture or commonly known as urban farming refers to growing plants and rearing animals that produce food within a city or town. It also comprises processing and then distributing that produce throughout the city. Conditions completely different from rural food production centers have inspired urban communities to develop unique and synchronous agricultural examples using the urban environment. The emergence of interesting urban agricultural models is a concrete example that serves as an impetus for urban communities to apply it.

The corona pandemic (Covid-19) that occurred in Indonesia has had a significant impact on human life in many aspects of people's lives. Policies during a pandemic such as Work from Home (WFH) and Large-Scale Social Restrictions (PSBB) also provide socio-economic impacts for residents, including their most basic needs, namely food. On the other hand, agricultural law, which continues to be eroded for the sake of development, and the age of farmers, who are

on average old, whose ability to cultivate them has decreased, have contributed to the decline in food. The threat of a food crisis is now slowly starting to haunt all the people. Based on data from Global Hunger Indonesia (GHI), the level of hunger in Indonesia is included in the focus category, although it has decreased from 24.9% (2010) to 20.1% in 2019. However, Indonesia must remain vigilant against the threat of famine, which can trigger many kinds of big problems such as health, social and security. In an effort to anticipate the food crisis during this pandemic, it has been encouraging people who live in cities through the urban farming movement to claim food availability.

Urban farming is a gardening concept using the space available in a residence or settlement. There are benefits of urban farming, namely (1) ecological value to create green space in urban areas, (2) economic value that might bring profit and sustainable income, and (3) educational value, which is a source of knowledge. People can fill their spare time at home permanently productive. In urban farming, plants are grown with the help of PAR or photo synthetically active radiation. As all lights are not suitable for plants, PAR represents the amount of light that can help in photosynthesis.

The habits of the Indonesians who are happy to gather can be used to form communities that promote urban farming in the cities. Limited community land is not an obstacle to forming creativity to produce something useful. Hydroponic and aquaponic development methods can also be performed because they do not need soil as a planting medium to produce food sources. People accept the availability of vegetables as a source of nutrition, green the environment and help reduce the impact of global warming (Santo et al., 2016).

Additionally, it can strengthen a sense of togetherness and create a culture of mutual cooperation in the urban environment. Apart from agricultural activities, farming and livestock can also be combined by implementing the Integrated Urban Farming System (IUFS). IUFS is an agricultural technique that is environmentally sound, economical, and sustainable. In an integrated urban farming system, all waste generated can be reused. Agricultural waste can be used for animal feed, and livestock manure can be processed as compost. Based on the foregoing, urban farming is very supportive and gives positive appreciation because it has proven to be of greater benefit to residents in the midst of a pandemic. A number of studies also explain that urban farming can be an ideal agricultural concept in the future.

Apart from the considerable benefits of urban farming, the main challenges in urban farming are choosing how to monitor, regulate, and minimize risks in the form of environmental, economic, and socio-environmental forms and understanding how urban farming can be sustainable in the global urban food systems. Urban agriculture can increase the locality value of food and reduce energy spent in the fruit and vegetable production process. Therefore, the city government has an important role in providing specific regulations to support the implementation of sustainable urban farming. The issue of urban farming must get the main attention; therefore, it needs various kinds of support from all stakeholders.

2. Problem Statement

What are the strategies for urban farming in Indonesia?

3. Literature Review

3.1. Urban Farming Theoretical Concept

Urban farming, which means farming in an urban home environment, is considered to be in line with the desire of city people to live a healthy lifestyle. The yields from urban farming are healthier since they fully implement an organic planting system, which does not use chemical fertilizers and synthetic pesticides. The decline in the quality of life experienced by urban people can also be increased again through gardening activities at home that refresh the mind. The massive development in the urban areas has led to the displacement of green open spaces. The loss of green open space greatly affects the stability of environmental ecosystems, as well as increases pollution, which is bad for the health of urban communities.

The concept of urban farming then offers a solution by creating green open land in the middle of dense urban buildings. Urban farming can manage polluted urban areas into a comfortable and healthy environment to live in. Various urban farming planting systems such as verticulture, hydroponics and aquaponics can easily be applied in limited areas. Urban farming activists turn their roofs into roof gardens, house fences into vertical gardens, and a block of pipe becomes a fertile hydroponic garden.

The urbanization process, which causes a high rate of development, also eliminates the existence of agricultural land in urban areas. Cities are no longer able to meet their food needs independently. Insufficient demand for foodstuffs will cause price inflation. If it continues to be developed, urban farming can be projected to meet the availability of foodstuffs and strengthen the food security of the city itself. The city government has an important role in providing special regulations to support the implementation of urban farming, including land use policies. Aside from getting closer to nature, urban farming can also strengthen the social relations between its activists. When urban farming is implemented in neighboring environments, urban farming can strengthen a sense of togetherness and create a culture of mutual cooperation in urban communities (Santo et al., 2016).

Urban farming can certainly be used as a productive activity that can be followed by many people. Not only community empowerment activities, but also urban farming can also support the economic conditions of the community itself by marketing urban farming crops.

Urban farming can indeed be performed amidst limitations, but urban farming has a big impact on the survival of urban communities. The same negative impact can also occur if the implementation of urban farming is not carried out properly and optimally. According to Lori et al. (2017), mistakes in urban farming practices can lead to increased noise and air pollution, flooding, and a waste of energy, especially water.

Failure to maintain urban farming plantations can lead to the development of mosquito species that spread malaria. The lack of skills and inadequate infrastructure are usually the main causes of failure of urban farming. Even though urban farming can be profitable if it continues to be widely developed, food output from urban farming is currently still far from meeting the food needs of urban communities. As stated by Hardman and Larkham (2014), the commodities produced by urban farming are still too far from agricultural products in rural areas. This is related to the lack of land use in urban areas, the weak financial resilience of urban farming activists, and in practice, urban farming activities are still very dependent on the volunteerism of residents.

4. Discussion

Urban farming has actually existed since ancient times, to be precise at Machu Pichu, where household waste is collected as one and used as fertilizer. The water used by residents is collected as a source of irrigation through a drainage system that has been specially designed by the city architects at that time.

During World War II, millions of Americans planted "victory gardens" in their backyards, eventually supplying a hungry nation with 40 percent of its homegrown fruits and vegetables (Birky, 2009). Once the war was over, these urban farms withered away, supplanted by increasingly efficient large-scale rural agriculture. When it began, urban farming was a way for growing cities to maintain access to fresh fruits and vegetables, along with green spaces. It helped build a community by creating a gathering place that also allowed people to spend time in nature. This program is believed to be the forerunner of the urban farming movement. From this program, the United States government could provide 40% of the food needs of its citizens at that time. Attention to the benefits of Urban Farming develops when people in various parts of the world realize that the day the population growth is getting bigger and the need for food is also increasing, while the area of agricultural land is decreasing.

Due to the technological upgrade, now people can grow food in places where it was previously difficult or nearly impossible. Urban farms can be either traditional small outdoor community gardens or modern vertical farms in urban design. These futuristic farms can be designed in various ways, but most of them have rows of racks lined with plants rooted in nutrient-rich soil, water, or just air.

Then, vacant lands in urban areas began to become locations for planting crops. Starting from the narrow land in front of the residence to the roofs of skyscrapers, it is now used as a place to conduct gardening activities. The Covid-19 pandemic has had a significant effect on human life. Social, cultural, economic, and even aspects of religious rituals undergo changes. These changes work at the global, national, and local levels. One of the aspects of this change touches the most fundamentally upon sustaining human life, namely the fulfillment of basic needs that are now also changing the direction toward a nadir point.

Several reports state that farmers (including breeders) in several areas are being threatened and have even gone out of business. In fact, farmers are the main pillar in ensuring the fulfillment of basic needs: food. If the farmers are no longer able to plant, the food crisis seems to be preparing to come soon. On the other hand, the policies of work at home, stay at home, study at home, physical distancing, and large-scale social restrictions (PSBB) also impact the people's socio-economy. This impact is felt most by people who work in urban areas, laborers, informal workers, and other daily workers who are the communities most affected by this situation. As the English proverb said, “Rub salt into the wound”. In the end, their fate is increasingly uncertain and their ability to survive has also decreased, including accessing their most basic necessity for survival: food. According to David Beasley, Executive Director of the World Food Program (WFP), which is part of the United Nations, at the end of 2020, the world's people who are affected by hunger are threatened to increase to 265 million people. Half of that amount was due to the new type of coronavirus pandemic.

Data from the Central Bureau of Statistics on the development of Farmers Exchange Rate (NTP) show a downward trend. The national NTP for March 2021 was 103.29, an increase of 0.18 percent compared with the NTP in the previous month. The increase in NTP was due to the Price Index Received by Farmers (*It*) increased by 0.32 percent, higher than the increase in the Price Index Paid by Farmers (Ib) of 0.13 percent. Nationally, the NTP for January-March 2021 was 103.22 with a value of *It* of 110.81, while *Ib* was 107.36. In March 2021, there was an increase in the Household Consumption Index (IKRT) in Indonesia by 0.11 percent, which was caused by an increase in the index in the ten expenditure groups.

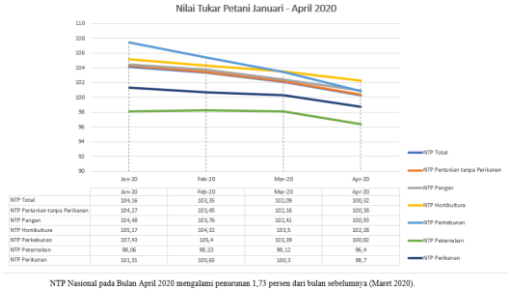

Figure 1. National NTP in April 2020 decreased by 1.73 percent from the previous month (March 2020)

According to some observers, since Indonesia implemented the green revolution, farmers as food producers have been gradually deprived or forced to be uprooted from the peasant culture inherited from generation to generation to then be replaced unilaterally by a cultural strategy of other nations' merchant culture that is superior in capital and technology. During its development, under the neoliberalism and free market systems, traders take shelter under multinational companies, then control food from the production process, the means of production, intake, consumption, and distribution. Since they control food from upstream to downstream, multinational companies are also the holders of authority in determining prices. In determining the price, the consideration is of course that they reap the maximum benefits. Meanwhile, on the other hand, farmers who are deprived of their sovereignty do not benefit from the trade in food they produce. Ironically, when food prices fell, farmers also felt the impact of the crisis.

Thus, the problem of why food price increases have no or less impact on improving farmers' welfare is because farmers are no longer the masters of their own agricultural products. And, all that happens because there is a power system that does not have a self-control system mechanism. In this context, fasting should not only form self-control in the person of a Muslim, but must also be actualized as a driving force against a greedy system.

Urban farming is a gardening concept by using existing space in a house or settlement. In the midst of the Covid-19 pandemic, this concept is increasingly prevalent, especially for those who live in urban circles. By conducting urban farming activities, people obtain the availability of vegetables as a source of healthy nutrition, reduce vegetable imports, green the environment, and help reduce the impact of global warming. A deeper and broader understanding of urban farming leads to this concept not only as a lifestyle for urbanites (urban), but to increase public awareness of food quality, nutrition, health, and the surrounding environment.

In a crisis situation and amidst government budget constraints, urban farming is appropriate to be developed as a form of local social security. Hydroponic and aquaponic development models that do not even need soil as a planting medium can be performed by planting various kinds of plants that can be sources of food security (Suharko, 2006).

Many benefits can be obtained from the concept of food sovereignty, including sufficient food needs, in this case, vegetables from the garden itself, so that it can save expenses and guarantee the quality of production. Furthermore, the concept of food sovereignty is also building the social solidarity with surrounding communities who must get together through the looming crisis. Of course, in the future, if there is an excess production, it can be an additional income for the community.

Surakarta is an autonomous region with city status in Central Java Province, geographically located between 110º45'15"-110º45'35" east longitude and 7º36'00"-7º56'00" LS with an area of 44.04 km². Land use in the city of Surakarta is mostly for settlements, covering an area of approximately 65% of the total land area, while the rest is used for economic activities and public facilities. The utilization of space in the city of Surakarta in accordance with Regional Regulation Number 1 of 2012 concerning the Spatial Plan for the City of Surakarta for 2011-2031 is divided into the development of protected areas and the development of cultivation areas. Protected areas consist of local protected areas, Green Open Space (RTH), cultural heritage area, and areas prone to natural disasters. Meanwhile, the areas included in the cultivation area are industrial areas, tourism-designated area, settlement designation, trade and service allotment areas, and office area.

The lack of rice fields in Surakarta is inversely proportional to the existing fruit yields. In 2019, the harvest was quite encouraging with an average yield of up to 4 tons.

Table 1. Harvest

No.	Type	Laweyan	Serengan	Pasar Kliwon	Jebres	Banjarsari	Number
1	Avocado	12	-	8	14	3	37
2	Manggo	250	2,150	2,345	7,228	222	12,195
3	Rambutan	25,000	805	66	460	16	26,347
4	Siamese orange	385	-	13	-	-	398
5	Guava	170	186	755	729	26	1,866
6	Water guava	115	46	91	64	18	334
7	Guava Bol	-	-	-	-	-	-
8	Sapodilla	115	35	47	78	30	305
9	Papaya	269	38	31	86	64	488
10	Banana	276	86	214	297	53	926
11	Starfruit	427	95	333	349	178	1,382
12	Kedondong	-	-	-	-	-	-
13	Melinjo	9	40	116	703	166	1,034

The level of formal education does not have a significant relationship with community attitudes toward the urban farming program. A high level of education will certainly make someone better at accepting an innovation or government program. However, in this study, the level of formal education

had no effect on people's attitudes toward the urban farming program. This is contrary that educational institutions as a system influence shaping individual attitudes. An understanding of good and bad, the dividing line between what can and should not be done is obtained from education. Personal experience has a very significant relationship with people's attitudes toward the urban farming program. This very significant relationship can occur because respondents have a lot of experience in agriculture so that respondents will be very experienced in agricultural matters. They also tend to better understand which one is good for them, so that when there is a government program that, according to respondents, can improve their welfare, they will decide to run the program.

The influence of family has a significant relationship with community attitudes toward the urban farming programs. The family functions as a support system for its members. Family members perceive that the family is a supportive person and is always ready to provide help and assistance if needed. This is in accordance with what stated, namely, the family is a critical source of influence in shaping attitudes since the family teaches basic values and trust. Positive or negative attitudes can be formed on the basis of information, suggestions, or prohibitions conveyed through words. Attitudes can indeed be shaped or changed through contact with emulated people. The reference group has a very significant relationship with the community's attitude toward the urban farming program. Extension officers as a reference group for the community play an important role in conveying the main information about urban farming to the head of the farmer group. Then, the head of the farmer group who obtains this information delivers it again to its members. This is consistent with the statement that the reference group is an individual or a group of people who can significantly influence a person's beliefs, attitudes, and behavior values. Reference groups have a direct (face-to-face) or indirect influence on a person's attitude or behavior. This basic concept can provide a perspective for understanding a person's beliefs, attitudes, and behavior. Mass media exposure has a very significant relationship with people's attitudes toward the urban farming programs. As a means of communication, various forms of mass media such as television, radio, newspapers, magazines, etc. have a major influence in shaping people's opinions and beliefs.

Counseling officers and communities in the Jebres District often use mass media to find information related to urban farming. Mass media communication is critical in providing a source of information and influences the formation of a person's attitude; mass media is a source of the main information in presenting ideas, products, opinions, etc. Cultural influence has a very significant relationship with people's attitudes toward the urban farming program. Culture is a tradition/innovation in the local community. The culture of the people of Surakarta City is still thick like mutual cooperation to strengthen relationships between fellow communities. The innovation also always develops according to the times such as awareness of back to nature, the use of the internet and mobile phones as a means of communication so that people have a strong relationship with culture, which can affect their attitude toward something. Without realizing it, culture has planted a line of influence on attitudes on various problems. Culture is one of the factors that can influence a person's personal formation.

Based on an interview with Surono, the Head of Mojosongo Village on April 30, 2021, there are 2 RWs that have become pilot projects for urban vegetable crops through planting vegetables with polybags and using empty pages of harvested yields that are sufficient to meet domestic consumption needs, and there are even many excess yields. The problem is that it is not absorbed by the market so that it is not a commodity only for household needs; this has resulted in the urban yard land use program being considered not prospective for the medium and long term (Weir, 1993).

Then, how to get started? All forms of activity required planning, likewise with urban farming activation planning. According to an urban farming activist from the Young Farmers School (Sekti Muda), Yogyakarta, urban farming activities are managed in a sustainable and collective manner. The key to sustainability here is to maintain soil fertility. There are two ways to maintain soil fertility: maintaining soil fertility (adding nutrients to the soil that the nutrients have previously been taken up by plants during the growing period until harvest) and adding certain media to maintain soil fertility for a long time. In this condition, the planted plants are not intended for commercial purposes but are intended for consumption by the family or the surrounding community.

5. Conclusion

The program of "*Lihat Kebunku*" (Look at My Graden) can be one of the urban farming movements carried out in urban communities by using the remaining area of the yard that is not used. This movement must involve a massive and broad community so that it can become a source of income and food sources during the Covid-19 pandemic, and it is even impossible to develop into ecotourism village tourism with its one village one product. The program of "*Lihat Kebunku*" (Look at My Graden) activity also helps urban communities restore unused land and process household waste into environmentally friendly waste.

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