Urban farming: implementation of prisoner guidance in an effort to support food security towards Rutan Boyolali productive

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Abstract. Rutan Boyolali is an institution that organizes guidance activities for prisoners as a social reintegration process. The guidance that is carried out recently leads to a productive one. One of the efforts to realize the productive correctional institutions can be done through agricultural activities. However, the location of the correctional institutions that are in the middle of urban areas faced the challenge of limited agricultural land. One of the solutions is to carry out the concept of urban farming. Through urban farming, it is hoped that prisoners can become skilled and ready to work when they are free. This concept also can be an innovation and solution in overcoming various problems in prisons. On the other hand, the benefits of urban farming are maintaining food security. The rate of urban development eliminates agricultural land and results in cities no longer being able to meet their food needs independently.

1. Introduction

Rutan Boyolali is one of the technical implementing units under the auspices of the Indonesian Ministry of Law and Human Rights which organizes guidance activities for prisoners. The implementation of guidance is in accordance with the pattern of prisoner guidance issued by the Ministry of Justice of the Republic of Indonesia based on the Decree of the Minister of Justice of the Republic of Indonesia No. M.022-PK.04.10 of 1990 and Law No. 12 of 1995 on Corrections. The Correctional Law strengthens efforts to realize a correctional system which is an arrangement for guidance for prisoners.

This guidance is as a social reintegration. The aim is to make prisoners realize their mistakes, improve themselves, and not repeat criminal acts so that they can be accepted again by the community, can participate, and can live normally as good and responsible citizens. Currently, the guidance that is carried out leads to a productive one. Through productive correctional institutions, the goals of correctional facilities will be achieved more optimally. This step was taken as an effort to empower prisoners to use their time better, be more productive and equip them with skills. Correctional institutions are now a place to be creative and produce products that can be used by the community. Through productive correctional institutions, prisoners can participate in national development.

The problems that arise in the present is the discontinuation of some form of guidance activities such as skills and independence training due to Covid-19 pandemic, usually in cooperation with Balai Latihan Kerja (BLK) Boyolali and Surakarta. The conditions of Covid-19 pandemic until now has not ended...
since the first case was announced in early March 2020. However, this condition did not dampen the implementation of duties and functions in Rutan Boyolali. Agricultural activities are one of the solutions to the challenges of guiding prisoners during the pandemic.

Various government policies have been implemented to reduce the transmission rate of the Covid-19 outbreak, ranging from PSBB, PPKM Micro, PPKM Darurat and to the current one, namely PPKM Level 4. That of course hinders people from meeting their daily needs. This causes disruption to food security both in terms of food availability and access.

One form of productive guidance in Rutan Boyolali is through agricultural activities. Limited land would be one of the challenges, given the geographic conditions of prison that are in the city center. Carrying the concept of urban farming, as a solution as well as innovation of guidance model in Rutan Boyolali in order to support food security in urban areas. Urban farming is agricultural practice in urban areas by using narrow land to produce food to fulfill the needs of urban agricultural products [1]. Another definition of urban farming is the planting, processing, and distribution of food and other products through intensive crop cultivation and animal husbandry in cities and the surrounding area, and reuse of natural resources and urban waste, to obtain a diversity of crops and livestock. In other words, urban farming is a food production activity in urban areas to facilitate access to food for urban communities. This activity has several benefits in so many sectors [2]. This paper discusses urban farming as a form of productive guidance in Rutan Boyolali and as an effort to support food security in urban areas, especially during the Covid-19 pandemic.

2. Methods
This study uses a qualitative method. Qualitative research is research that intends to understand the phenomenon of what is experienced by the research subject holistically, and by means of description in the form of words and language, in a special natural context and by utilizing various natural methods [3]. The purpose of research is more aimed at presenting a picture and/or understanding of how and why a phenomenon or reality occurs [4]. This study focuses on guidance activities in Rutan Boyolali, where one of the most prominent forms of guidance during the Covid-19 pandemic is agricultural activities that carry the concept of Urban Farming. The location and object of the research were chosen with the consideration that Rutan Boyolali is an institution that has successfully implemented a guidance program through urban farming during the Covid-19 pandemic and the results have been accepted by the market.

Data collection was carried out by interview, observation, and document review.

3. Results and discussion

3.1. Productive guidance
Rutan Boyolali has a residential capacity of 152 people. However, the fact is that currently it has an average occupancy of up to 180 people. The main problem faced by correctional institutions in Indonesia, including in Rutan Boyolali, is overcrowding. Overcrowding occurs when the number of inmates is greater than the available space or prison capacity. This also raises various further problems including the threat of disruption of security and order in prisons, and also the fulfillment of prisoners' rights could not be optimal [5]. More specifically, the impact of overcrowding in prisons are described as follows: deteriorating health conditions of prisoners, deteriorating psychological of prisoners, conflict between prisoners, increasing dissatisfaction, guidance does not run according to regulations and budget wastage due to increased consumption of water, electricity, food and clothing, etc.

Optimizing the correctional guidance activities is expected to be one of the alternative solutions to overcome these problems. The guidance program can help productivity in correctional institutions as well as social reintegration efforts so that experts can acquire skills, sense of justice, realize mistakes, improve themselves, and do not repeat criminal acts. In addition, after being released, they can be re-accepted by the community, participate in development, and can live normally as good and responsible citizens [6].
Guidance includes religious development, personality and independence [7]. The purpose of correctional guidance is divided into three things: from the Correctional Institution no longer repeating criminal acts, becoming a useful human being, participating actively and creatively in building the nation and state and being able to get closer to God Almighty in order to get happiness in the world and in the hereafter [8].

The implementation of guidance for prisoners cannot be equated with most people and must use the principles of guidance. There are four important components in the development of prisoners [8]: a) Self, the prisoner himself. b) Family, is a member of the nuclear family or close family. c) Community, are people who are around prisoners while still outside the Correctional Institution, can be ordinary people, community leaders or local officials. d) Officers, may be police officers, lawyers, security officers, social workers, correctional officers, detention centers, judges and others.

The role of officers, especially correctional officers in carrying out guidance activities has a great influence in achieving correctional goals. Therefore, it is important for correctional officers to have qualified competence [9]. Because guidance activities involve intense interaction, one of the competencies that must be possessed by officers is in terms of communication. Effective communication is also an important factor in guidance [10]. In this case, interpersonal communication between officers and prisoners. Factors that influence the effectiveness of interpersonal communication in this case include openness, empathy, supportive attitude, positive attitude, and equality [11]. The existence of an effective communication process can indirectly support the success of guidance between officers and prisoners.

The guidance that is being carried out now leads to a productive one to support the implementation of productive prisons by the Director General of Corrections. Productive Prison is a place where productive work activities are held by prisoners in accordance with applicable regulations. Productive means being or capable of producing, producing results, benefits and so on and profitable and able to produce continuously and regularly to form the new elements. In the sense that in terms of productivity, it does not only produce products but is more capable of producing in large quantities. Potential indicators for productive prisons are as follows: absorption of 70% of the workforce in prisons in productive activities in order to improve work skills (life skills), management of productive activities based on the potential of available resources, products can be produced sustainably and availability of facilities and infrastructure that support the process of productive activities [12]. Productive guidance aims to help develop and prepare prisoners to be able to return to society by bringing skills, as well as being part of positive activities to increase knowledge and income.

Agricultural cultivation is an activity that is very suitable to function as guidance. This is not only for productive purposes, but also helps maintain the mental health of prisoners who live confined in prisons. Caring for plants can be a means to reduce the stress load on individuals. Planting and caring for plants can be useful as a hobby and attention or concentration on a problem. By taking care of plants, concentration will be poured on the plants at any time, so that the stress load can be reduced [13].

3.2. Implementation of urban farming to Rutan Boyolali productive

One of the forms of guidance in order to make Rutan Boyolali productive is through agricultural activities. Indonesia has two seasons, the rainy season and the dry season, so it is very suitable for farming [14]. Rutan Boyolali is located in the middle of an urban area with a limited area of agricultural land. The area of agricultural land in Rutan Boyolali is only 1,200 m². However, it is not an obstacle to achieving optimal agricultural yields.

Carrying the concept of urban farming for productive purposes is the answer to the constraints of limited land in urban areas. Urban farming can be one solution. Integration of agricultural development in urban development can create better urban ecosystems [15].

In general, urban farming is defined as agricultural activities carried out in cities. More specifically, urban farming is a complex system that includes a spectrum of interests, from the production, processing, marketing, distribution and consumption [16]. Urban farming is also an innovation and solution to guidance problems during the Covid-19 pandemic where many activities must be limited while in this
condition. Some of the ways that are prepared for urban farming activities are preparing a place for planting crops, choosing a good area to get sunlight because it is very helpful in plant growth, choosing quality seeds according to our tastes for agriculture, provide good compost to help the soil retain moisture as plant nutrients, using vertical gardening techniques that help increase circulation and keep plant leaves away from the soil [17].

Urban farming that has been successfully implemented in Rutan Boyolali applies two methods, namely: land use (conventional method) and vertikultur.

3.2.1. Urban farming through the utilization of the land surface (the conventional way). In the conventional way, the types of plants that are cultivated are tomatoes, eggplants, long beans, chilies, and watermelons. This agricultural cultivation is carried out by utilizing vacant land on the right and left of the male prisoners' residential block. This location is an open land that gets a lot of sunlight so it is suitable for agricultural activities. Plant seeds are obtained at agricultural shops, by selecting quality seeds that have obtained a decree from the Ministry of Agriculture. In the process of cultivating plants, it is done by minimizing the use of chemicals to a minimum. The main fertilizer uses manure which is widely available in the Boyolali area which is an area for cattle farmers.

This 1,200 m² area is divided into five parts, each planted with tomatoes, eggplant, long beans, chilies and watermelons. For tomato plants, diva varieties are cultivated which are still classified as hybrid varieties. The advantage of this variety is its high production. In one tree can produce 60–70 fruit with a weight of 80–120 grams / fruit. Tomatoes can be harvested 80 days after planting. The total harvest to the end produced from 300 stems is 1.2 tons.

Eggplant plants use the Latino F1 type because they are more resistant to bacterial wilt disease, stem rot and several other viral attacks that often interfere with eggplant plants. The texture of the fruit is not mushy, the taste is sweet and the skin of the fruit is shiny purple so that it looks more attractive in the market. Eggplant plants are harvested 50 days after planting. The total harvest produced from 320 stems is 1.4 tons.

Long beans use superior seeds that have been certified by the Ministry of Agriculture with the number: 3447/Kpts/SR.120/10/2012. This type is more resistant to plant disease disorders which are usually caused by viruses. Long beans began to be harvested 45 days after planting. The total harvest produced from 500 plant stems is 4.6 quintals.

Chili plants use hybrid seeds, where the seeds are more resistant to wilt or fruit rot disease that often comes close to chili plants. In addition, plant vigor is also good with dense fruit. The total harvest produced from 450 stems is 3.2 quintals.

Watermelon planted is a seedless hybrid watermelon, where this type is more popular in the market, especially in the Boyolali city area. The advantages of this type are strong, uniform plant growth, easy maintenance, easy fertilization and evenly red, sweet and crunchy flesh. Watermelons are harvested 60 days after planting. The total harvest produced from 280 plant stems was 710 fruit with an average weight of 5 kilograms/ fruit.

One of the obstacles in the agricultural business is the selling price which changes from time to time following the market price. This fluctuating price results in less promising profits. The role of the government is certainly needed in this regard. In this regard, several efforts are needed, namely: developing synchronization of vegetable production across producing regions, developing vegetable production centers that are more regionally distributed, developing simple and efficient storage technology and facilitating farmers to apply the technology, and facilitating farmers to have more access to capital institutions [18].

3.2.2. Urban farming through vertikultur. The second urban farming method applied in Rutan Boyolali is verticulture or vertical urban farming. Vertical farming as a component of urban agriculture is the practice of producing food in vertically-stacked layers, vertically-inclined surfaces and/ or integrated into other structures. Vertical farming is not a new idea. In 1915, Bailey coined the term “vertical farming”. Since then, architects and scientists, especially towards the end of the twentieth century, have
repeatedly looked into the idea of producing food in urban environments because of constant human population growth and the pressures exerted on resources for food production [19].

In vertical urban farming, the types of plants that are cultivated are celery, kale, spinach and leeks. Vertical urban farming is applied to the area around the women’s residential block by utilizing used plastic bottles of mineral water which are widely available at the Boyolali Rutan. This method is very suitable to be applied around women's residential blocks because the area is very limited. The main environmental and spatial constraints also indicate that vertical farms are going to be part of the future horticultural production [20].

Some of the advantages of implementing vertical urban farming are:

a) **Cost Saving.** Vertical Urban Farming can be applied in narrow areas so it does not require large capital. The maintenance needed is also simpler and easier. This is certainly different from conventional agriculture which requires large land so it also requires large capital for its operations.

b) **Environmentally Friendly.** Vertical Urban farming is more environmentally friendly because it can use household waste as was done in Rutan Boyolali by using plastic bottles used for mineral water packaging which are then arranged vertically. In addition, prison kitchen waste can also be used by processing it into organic fertilizer. This is also an ecological advantage of vertical urban farming.

c) **Adding Aesthetics.** In addition to food sources, plants grown with the vertical urban farming method can also function to beautify the room. Utilizing used bottles that are neatly arranged, with green and well-maintained plants can add a beautiful impression to the prison block environment.

Utilizing an area of 224 m², in one harvest can be produced 210 bunches of kale are sold at Rp. 1,000/bundle, 160 bunches of spinach are sold at Rp. 1,500/bundle, 70 bunches of celery are sold at Rp. 1,500/bundle and 75 bunches of leeks are sold at Rp. 1,800/bundle.

3.3. Urban Farming in Rutan Boyolali supporting food security in the city

Urban Farming is one of strategic resources which are valuable in many terms such as economy, social and environmental terms [22]. Urban farming activities improve people's lives by creating healthier and environmentally friendly lifestyles and contributing to food security [23]. Urban farming by Food Oriented Development (FOD) is a concept of urban development that can make the city a food provider for its own citizens on an ongoing basis [19].

There are three indicators of food security, namely physical availability of food, economic and physical access to food, and the price stability of food. Therefore, effective food security depends on availability, distribution and consumption. However, the Covid-19 pandemic changed all that by disrupting the food logistics system due to limited activities during the pandemic, as well as the food supply chain so that people will lose access to food which threatens lives [24].

Agricultural cultivation activities in Rutan Boyolali through urban farming can support food security in the city of Boyolali through: supporting the city's independence in maintaining stability of food, collaborating with the association of roving vegetable merchants, and minimizing distribution constraints during the Covid-19 pandemic.

3.3.1. Supporting the city’s independence in maintaining stability of food. The real contribution of urban farming's Rutan Boyolali in maintaining food security in the city is by supplying the availability of food. The existence of urban farming in Rutan Boyolali can make the city more self-sufficient in food, namely reducing dependence on the availability of food from other regions. This is also very useful, especially in the Covid-19 pandemic as it is now where city people are squeezed by the lack of food supply in the city due to the implementation of community activity restrictions or called PPKM. Some of the
The conditions that are the impact of PPKM implementation are the closure of road access in the city and the termination of the operation of traditional markets and other shopping centers. Under these conditions, it is very important to optimize food stability in cities. Urban Farming is the right alternative solution to maintain the food security of urban communities independently during the Covid-19 pandemic.

3.3.2. Collaborating with the association of roving vegetable merchants. Due to the closure of traditional markets and restrictions on activities during the Covid-19 pandemic, the role of roving vegetable merchants has greatly increased. The phenomenon of the existence of roving vegetable merchants in the distribution of food ingredients has become a trend in urban areas, including in Boyolali. Itinerant vegetable traders reach all areas of the city. Rutan Boyolali collaborated with the roving vegetable merchant association in marketing agricultural crops.

3.3.3. Minimizing distribution constraints during the covid-19 pandemic. Urban farming in Rutan Boyolali is able to support food security in the city area, especially in the conditions of the Covid-19 pandemic where there are government policies in limiting activities and population mobility. In the conditions of the Covid-19 pandemic, the process of distributing food items experienced many obstacles. Meanwhile, urban areas are highly dependent on food supplies from other regions, thus threatening food security. With the existence of urban farming in Rutan Boyolali, it can reduce the factors that hinder the distribution of food in urban areas.

Urban Farming can be a strategy to improve agriculture in cities [15]. Urban farming in its application will require active involvement of the community, ongoing assistance will encourage the sustainability of local economic ventures, create job opportunities and improvement of community welfare [25].

4. Conclusion

One form of guidance activities carried out by Rutan Boyolali is through agricultural cultivation. Carrying the concept of Urban Farming as an innovation and solution for farming on limited land. This activity is also a form of effort towards Rutan Boyolali Productive. Urban Farming in Rutan Boyolali is carried out using the land surface and verticulture methods. Rutan Boyolali's Urban Farming is also an effort to support food security in urban areas, especially during the Covid-19 pandemic.

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