

Urban Farming to Ensure Food Security and to Generate Cash Income During the Covid-19 Pandemic: A Case Study in Bausasran Urban Village Indonesia

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ABSTRACT

The Covid-19 pandemic proved to be a momentum for the Gemah Ripah Farmer Group (GRFG), even though with a small area of land, they were able to continue providing food through urban farming. They were able to inspire the growth of vegetable villages and received several awards for their contributions. This research aims to analyze the implementation of urban farming so that it can serve as food security and cash income during the Covid-19 pandemic. The research was conducted in Bausasran urban village, Danurejan sub-district, Yogyakarta province, Indonesia. The present study was conducted using a qualitative method with a case study approach, where data were collected through semi-structured interviews, observations, discussions, and documentation studies. The results show that the implementation of urban farming in the GRFG is effective as an alternative solution in providing and maintaining food availability during the pandemic, since vegetables and fruits are ready to be picked from the garden at any time. It reduces food expenditures and generates cash income for its members through the sale of processed urban agriculture products and educational tourism. This study provides an example of how innovative urban farming can help strengthen the economy of a community.

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I. Introduction

The Covid-19 pandemic that broke out in Indonesia in March 2020 has caused health, social, and economic disparities. Economic growth is only 2.97% in the first quarter of 2020, although in the past five years Indonesia has averaged 5% annually [1]. In addition, the prolonged pandemic may lead to a decline in food security, apart from the disruption of the logistics system and the impact of inadequate public income due to health protocol policies. This impact is particularly felt by people in urban areas, such as laborers and informal workers, some of whom have lost their jobs due to layoffs or business losses due to the pandemic, contributing to the decline in food security experienced by the community. The results of the LIPI (Indonesian Institute of Sciences) survey (2020) showed that as many as 15.6% of workers experienced layoffs and 40% of workers experienced a decrease in income, including 7% of workers whose income decreased by 50% [2]. The drop in income for the affected community has put pressure on consumption. This is evidenced by data from the Indonesian Central Statistics Agency (BPS) (2020), which shows that household consumption fell from 5.02% in the first quarter of 2019 to 2.84% in the first quarter of 2020 [3].

According to the Global Food Security Index (GFSI), Indonesia's food security weakened in 2021, with an index score in 2020 reaching a level of 61.4 but falling to 59.2 in 2021, measured by food price affordability, nutritional quality and food safety, supply availability and natural resource resilience [4]. The index ranks Indonesia's food security 69th out of 113 countries in 2021 [4]. Stringent measures to control the spread of Covid affect the food supply chain, which includes producers, agricultural inputs, transportation, processing industries, and shipping until the food reaches the consumer [5] [6]. Some regions also experienced distribution problems that led to rising food prices. Obstacles arose because some producers stopped shipments due to fears of lockdowns



and Covid-19 transmission [7]. Although food prices at the producer level have tended to decrease, food prices at the consumer level have increased, resulting in a large price gap between producers and consumers [8]. Wattimena et al. (2021) reported that Yogyakarta is one of the areas that has been severely affected by the pandemic including losses in the tourism sector in April 2020 amounting to 67.04 billion, a decrease in MSME income by 80%, and 1,465 workers have been laid off. The impact on the tourism sector is also reflected in a 5-10% decrease in food consumption [9].

To anticipate food shortages due to the pandemic, it is necessary to strengthen local food productivity at the household and community levels, such as through urban farming [10]. Urban farming or urban agriculture is the collective term for a wide range of agricultural activities that take place within the boundaries or direct influence of a city [11][12]. The yard around the house can be used to grow plants such as ornamental plants, fruits, vegetables, spices, and medicines to meet daily needs [10][13]. It can also be integrated with livestock/fish as a source of animal protein [14][15]. The use of yard land is an alternative to achieve household economic independence [14]. The conversion of bare land to urban and peri-urban agriculture could improve food security and social cohesion [16]. Social capital increased agricultural productivity and improved food security based on agricultural households [17]. It is worth mentioning that social capital can be defined as a collective asset in the form of shared norms, values, beliefs, trust, networks, social relationships and institutions that facilitate cooperation and collective action for mutual benefit [18]. Pandemic conditions force everyone to live frugally and become self-sufficient. For example, by cultivating food that can be grown in the garden such as chilies, vegetables, and fruits, the harvest is sufficient for family consumption and can reduce spending on basic daily needs [19].

Various farming methods can be done other than conventional, such as with pots or polybags, verticulture, hydroponics, aeroponics, aquaponics, and so on [20][21]. In crisis situations and in the midst of limitations, urban farming is appropriate to be developed as a form of local social security [21]. Local food can be a safety valve in maintaining food supply for the community when there is a shock to food availability or when the market cannot serve the food needs of the community due to physical access due to disasters or disruption of economic access due to price spikes, local food grown by farmers in yards, gardens, or fields is always ready to be harvested [22]. The urban farming program is strategic for urban communities by utilizing limited land to produce vegetables and horticulture to meet family needs that can be harvested quickly and a source of cash income by trading if the amount is large enough [8]. However, urban farming can only be successfully embedded in urban areas if consumers perceive it positively and accept it in their community [23].

As a safeguard, food is considered to be able to meet the needs according to balanced nutrition guidelines according to Permenkes No. 41 of 2014, that for adolescents and adults it is recommended to consume 400-600 grams of vegetables per person per day or as much as 3-4 servings of vegetables and 2-3 servings of fruit every day or half of the plate contains fruit and vegetables at each meal. 150 grams of vegetables is equivalent to 1 medium bowl of cooked vegetables. Fruit consumption is at least 150 grams a day or equivalent to 3 medium banana ambon or 1.5 pieces of medium papaya or 3 medium oranges. While the recommended consumption of animal food is 80-160 grams or (2-4 pieces) of medium-sized fish a day.

Urban farming provides food security and the ability to generate household income [24][25]. It can be an alternative solution in providing healthy food, and the benefits can also be felt directly in reducing expenditure on kitchen needs, and even increasing income because the harvest can be sold to local residents [21]. In addition, the environment becomes green, healthy, beautiful and adds to aesthetics [21]. Furthermore, it can also increase community income if the vegetables produced are processed into processed food products and then be commercialized using effective marketing techniques [26]. The techniques can be direct selling and door to door by providing special prices; folk markets or digital markets such as vegetable boxes or even reach supermarkets, partnering with restaurants or hotels [27]. The promotion and marketing can be done through social media and digital marketplace [27]. According to Mubyarto (1994), sales revenue can be calculated from the products sold multiplied by the selling price per unit of each product, with the calculation formulation R (Revenue) = Q (Amount sold) x P (Price per unit) [28]. Meanwhile, income is revenue minus costs in business activities which can be formulated with the calculation of Y (Income) = R (Revenue) - C (Production costs) [28]. According to [29], the impact in the community can be analyzed with a before-

after comparison approach using indicators of changes in social, economic and ecological aspects [29].

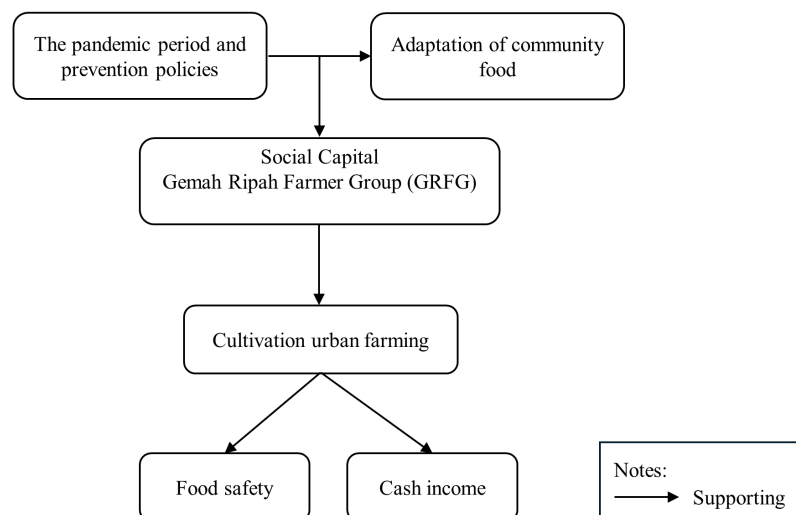


Fig. 1. Research framework

The Gemah Ripah Farmer Group (GRFG) was established on August 4, 2009. They were initially only some residents of RW 09 Bausasran Village who have the same hobby of planting. They have a garden with a size of 350 m² which was abandoned land. They started a simple idea to make the village look beautiful, provide food and can help with additional income. The role of this group was proven when the level of Covid-19 spread in Yogyakarta City increased in July 2020. Plant products can be sold and consumed by its members and can even be distributed free of charge to residents to support the community's food needs. To increase income, processed urban farming products are also developed and sold. The GRFG has received several awards for its contributions to the community, such as supporting Yogyakarta to be the best city in the 2022 Regional Development Award (PPD) at the national level through the vegetable village innovation held by the Ministry of PPN / Bappenas. Therefore, the GRFG garden often becomes a destination for educational tours from various farmer groups, institutions, universities, the private sector and communities outside Yogyakarta. Based on the background that has been described, the problem analyzed in this study is how the implementation of urban farming can serve as food security and cash income during the Covid-19 pandemic? The research framework used in this study is described in Figure 1.

II. Method

This study is descriptive in nature and was conducted using a qualitative method with a case study approach to explore and describe in depth the implementation of urban farming to support food security and cash income during the Covid-19 pandemic. This research was conducted from July - November 2022. The aspects, variables and indicators that were used in the analysis of how urban farming, carried out by groups of farmers, can support food security and cash income before and during the pandemic are presented in Table 1. The main informants in this study are the administrators and 10 members who play an active role in the GRFG. Supporting informants are village leaders, RT (neighborhood) and RW (hamlet) leaders, agricultural extension workers, and 7 residents who were considered able to answer questions related to community social energy in urban farming. The types and sources of research data consisted of primary data that was obtained directly from informants and secondary data that was obtained indirectly through other parties and documents. Data collection techniques used in this study are semi-structured interviews, observational approaches, discussions, and documentary studies. The data analysis technique is performed by collecting information then analyzing the problem and describing it, then reducing the information and then concluding it. The data validity test was carried out by triangulating sources and triangulating techniques.

Table 1. Analysis of urban farming support before and during Covid-19 pandemic

| Aspects | Variables | Indicators before and during the pandemic |
|---------------|---|---|
| Food security | Meets the food needs of an individual adult per day | Fulfillment of vegetable consumption recommendations per day/per cropping cycle of about 400-600 grams per member or 3-4 servings of vegetables per meal. Fruit consumption of at least 150 grams or 2-3 servings every day. Animal food requirement of 80-160 grams or equivalent to 2-4 servings a day. |
| Cash income | Cash revenue and income | Additional cash revenue from commodity sales during one cropping cycle and income from sales of processed products. *Revenue = Number of products x Selling price *Income = Revenue-Production cost |

The research location was purposively chosen in RT 33/RW 09, Kampung sayur (Vegetable village), Bausasran urban village, Danurejan sub-district, Yogyakarta province. This location was chosen because there is the GRFG that successfully inspired the community to do urban farming and initiated the growth of 13 farmer groups with the concept of vegetable village. The fact that they also receive several awards for their contributions to the community is also a reason to choose this place as a research location. Some of these successes and awards have led to many outside communities/agencies/ private/ public companies conducting studies so that they are considered to be representative of the research.

Table 2. Total population by gender, age, education, and livelihoods (source: Bausasran Data 2022)

| Categories | Sub-categories | Number (Person) | Percentage (%) |
|-------------|------------------------|-----------------|----------------|
| Gender | Male | 3.620 | 48 |
| | Female | 3.849 | 52 |
| Age | 15-64 | 5.280 | 76 |
| | > 64 | 575 | 8 |
| Education | SMP | 812 | 11 |
| | SMA/ SMU | 2.277 | 32 |
| | Akademi/D1-D3 | 419 | 6 |
| | S1 | 1.355 | 19 |
| Livelihoods | Private sector | 1.570 | 48 |
| | Self-employed / Trader | 1.004 | 31 |
| | Services | 485 | 15 |

According to the monograph of Bausasran urban village in 2022, the total population in Bausasran is around 7,469 people with 2,553 households. The number of residents in Bausasran based on gender, age, education and livelihoods, is listed in Table 2. The number of residents by gender is predominantly female at 3,849 people or 52% compared to males at 3,620 people or 48%. This larger number of women has the potential to support the vegetable village in Bausasran Village which is incorporated in farmer groups as an effort to improve the urban agriculture sector. The dominance of the productive age people in Bausasran residents (15 to 64 years old, based on the Labor Law No.13 of 2003) and educated people are also the potential support for the development of urban farming programs.

The GRFG is in RT 33/RW 09 in Bausasran urban village, Danurejan sub-districts, Yogyakarta province. The establishment of the GRFG was motivated by a Yogyakarta province government program conducted in 2008 on sustainable yards. The program stopped because it was completed, and the land was sold by the owner. Then in July 2009, one of the managers of the sustainable yard program implemented the previous year and one of the residents who happened to be the owner of the land abandoned due to the collapse of buildings due to the earthquake in Yogyakarta in 2006, took the initiative to jointly utilize the 350 m² land with various vegetable plants again.

The initiative was then conveyed to the other administrators, who then informed the proposal to other residents in RW 09 through several formal and informal meetings such as RT, RW, PKK and

mosque recitation meetings. Then the community, with donations of energy, money, goods such as bamboo, planting media and food, then moved together to clear the land from the ruins of the building with the presence of theantren, kelurahan, Field Agricultural Extension, Village Development Officer (Babinsa), and the Military Rayon Command (Koramil) to establish land in RW 09 / RT 33. Over time, through the role of RW, residents then took the initiative to contribute independently to the purchase of seeds, polybags, fertilizers, and soil until the formation of an independent farmer group with an agreement on the name Gemah Ripah on August 4, 2009. The GRFG land can be seen in Figure 2.



Fig. 2. The GRFG garden

The group consists of 19 members with 13 active members. Some of the roles and tasks in the group are chairman, secretary, treasurer, public relations and marketing, garden coordinator, human resources and training section, processed agricultural products section, and members. The members are dominated by women (12 members) and self-employed/ traders (14 members). The education of the members is mostly high school/ vocational school (9 members) as can be seen in Figure 3. Most of the members (95 %) are at the productive ages (i.e., 15-64 years old).

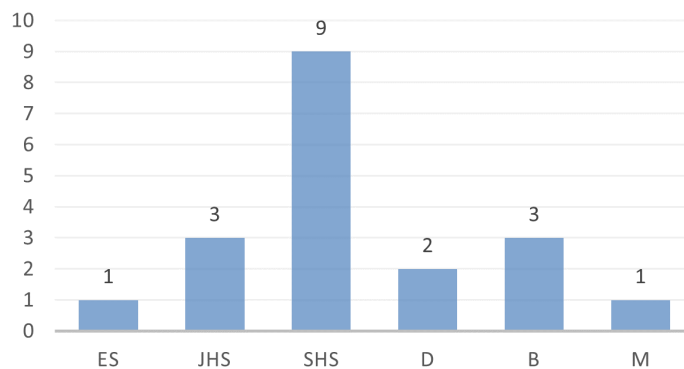


Fig. 3. The education level of the GFRG members. ES: Elementary School, JHS: Junior High School, SHS: Senior High School, D: Diplom, B: Bachelor, M: Master

III. Results and Discussion

A. Urban farming to provide food security

Food security pursued by the GRFG is an instrument to maintain community food availability through urban farming by optimizing resources to meet daily consumption needs both in fresh and processed form. The following is a macro analysis matrix of commodities in the GRFG as shown in Table 3. Some types of organic vegetables grown in the GRFG garden include Brazilian spinach, mustard greens, chilies, tomatoes, eggplants, water spinach, spinach, lettuce, pakcoy, celery, leeks, cabbage, bitter melon and others. Some of these commodities are managed using cultivation techniques in soil, polybags, shelves, pots, verticulture, wall gardening and hydroponics.

Table 3. Commodity macro analysis matrix

| Commodities | Product types | Contribution for members and their families | Community engagement |
|-------------|---|--|--|
| Vegetables | Brazilian spinach, mustard greens, water spinach, lettuce, pakcoy, chili peppers, tomatoes, eggplant, celery, green onions, cabbage | <ul style="list-style-type: none"> ➤ For daily consumption in the form of cooked vegetables ➤ To be processed into processed products and a mixture of processed product ingredients | <ul style="list-style-type: none"> ➤ The urban farming and processing of the urban farming products is done by the GRFG members and the community can buy by picking in the field or buying the processed products. ➤ For people outside of the GRFG, they can establish other farmer groups with the concept of urban farming and participate in promoting the greening program of the urban village. One yard is encouraged to plant at least 10 pots. |
| Fruits | Banana, guava, mango, papaya | <ul style="list-style-type: none"> ➤ To be consumed at harvest time ➤ To be processed into packaged products | |
| Fish | Catfish | <ul style="list-style-type: none"> ➤ To be consumed at harvest time ➤ To be processed as frozen marinated catfish | <ul style="list-style-type: none"> ➤ The GRFG members produce on their common land and process it into frozen marinated catfish. Meanwhile, the community can buy at the farm and purchase the products. ➤ For people outside the GRFG, they can establish other farmer groups and participate by raising catfish using budikdamber (fish farming in a bucket) at home. |

In general, with the existence of urban farming, the vegetables managed by the GRFG have made a real contribution in maintaining the food needs of members and the community even though the role is still not that large, but the impact can be felt before and during the pandemic. In accordance with government recommendations that the standard of adult individual vegetable consumption as intensively promoted through the Community Movement (GERMAS) is 400-600 grams per person per day or 3-4 servings of vegetables per meal, where one meal of 150 grams is equivalent to 1 medium bowl of cooked vegetables.

During the pandemic, the GRFG garden proved to be able to contribute to helping each other and helping the adequacy of vegetable consumption for people who had to be isolated due to Covid-19 by distributing them for free. For the adequacy of vegetable consumption needs during the pandemic, some of the conditions of group members and residents are the same as their conditions before Covid. some consider the need for vegetables between 3-4 medium bowl portions can be met only from the land, but some others still need additional vegetables by shopping for vegetables outside the land. As expressed by group members, they can take vegetables from the field on average around 1-4 bunches (around 0.4-1.6 kg) of vegetables to fulfill their daily needs during the pandemic. In general, informants consider that, although the contribution of vegetables from the land is still on a small scale, its existence, which is ready to be picked at any time, has helped save money on daily vegetable shopping needs, especially since vegetables are the food that is more often consumed.

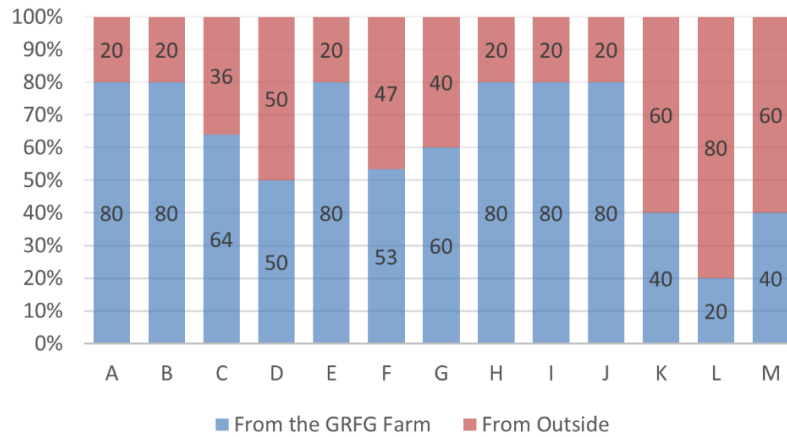


Fig. 4. Member and resident vegetable consumption from the GRFG garden

Figure. 4 shows the percentage of source of vegetable consumption of members and residents. Most informants consume vegetables from the farm in a larger proportion than from outside. The consumption of vegetables by members and residents is sometimes also influenced by the availability of each commodity which has a different harvest cycle so that it will be a little abundant during the harvest period and vice versa is limited to be picked if it has not entered the harvest season. Scenes during vegetable harvest time are shown in Figure. 5a.



Fig. 5. Scenes during harvesting: (a) vegetable commodities, (b) fruit commodities. The harvested catfish after the seasoning process (c).

Fruits grown in the GRFG garden include water guava, banana, mango, papaya and longan. There are not too many fruit plants there because of the limited land. Some bananas, longan and papaya are planted on the ground, while some guava is planted on the ground and in pots. The government recommends that fruit consumption should be at least 150 grams a day, which is equivalent to 3 medium-sized bananas or 1.5 medium-sized papayas. Since the fruit crops can be harvested depending on the cycle of the harvest season, the group members are not able to consume it regularly every day. However, when the harvest comes, it is usually distributed to some members or eaten and processed in the garden to be enjoyed together. As with bananas, when the harvest arrives, they are sometimes eaten together during activities in the field or are welcome for members who are willing to take them home or who are willing to process them to be sold as banana chips. Some of the fruit grown on this land is usually not sold to other residents because the number of plants is still limited. This shows that the amount of fruit consumption by group members is also affected by the amount of production.

The consumption of fruits, according to most group members, is also influenced by their availability, which is only limited during the harvest season, sometimes with a long duration of time. Fruits that are often and widely consumed are bananas and papayas because they are faster to harvest than other fruits. The fruit consumption of the members is also influenced by the lack of priority for them to be able to eat fruits in their daily lives, due to limited income. Only if they have excess income, they usually buy fruits at affordable prices, especially during the Covid period as a source of vitamins as an appeal to maintain health conditions. This is understandable because during the Covid period their income experienced a fluctuating decline. An overview of the fruit harvesting situation can be seen in Fig. 5b.

In the GRFG garden, urban farming is also integrated with catfish. This catfish began to be cultivated from before the pandemic both through budikdamber (fish farming in a bucket) and in fiber ponds. During the pandemic, catfish cultivation is increasingly added in nurseries and even multiplied in budikdamber and adding fiber ponds both on Gemah Ripah land and Gapoktan (farmer group association) land. During the Covid period, catfish raised on these two lands proved to be able to help members and local residents in meeting the needs of side dishes or animal protein at harvest time. Even able to meet the demand of Danurejan sub-district to support the stunting program during the pandemic by procuring 265 kg of catfish in packaged form. In this case, the GRFG garden itself can supply around 75 kg of catfish in seasoning packages. The harvested catfish after the seasoning process is shown in Fig. 5c.

B. Urban farming to generate cash income

The urban farming activities done by the GRFG can also generate cash income for its members both before and during the pandemic. The sales of cultivated products (i.e., vegetables, fruits, fish, and medicinal plants commodities) in raw and fresh form can increase cash income of the GRFG members. The cash income factor drives the change of plant types in the garden. Since the establishment of GRFG, it had harvested several commodities such as spinach, mustard greens, pakcoy, lettuce, water spinach, eggplant, tomatoes, cabbage, and chili in large quantities averaging more than 7-10 kg in each harvest, but after learning about Brazilian spinach introduced by a University in Yogyakarta around November 2021, many of these vegetable commodities are now managed only as companion commodities planted in small quantities.

Table 4. Total revenue and cost of the GRFG in a month

| No. | Commodities | Revenue IDR | Cost items (routines and incidental) | Cost IDR |
|-----|-----------------|----------------|---|-------------|
| 1. | Vegetables | 5,136,000 | 1. ABMix fertilizer | 115,000 |
| 2. | Fruits | 318,000 | 2. Soil media | 800,000 |
| 3. | Catfish | - | 3. Seeds | 2,000,000 |
| 4. | Medicinal herbs | - | 4. Rockwool | 309,000 |
| | | | 5. Electricity cost | 500,000 |
| | | | 6. Incidental costs | 1,000,000 |
| | Total | 5,454,000 | Total | 4,724,000 |

The sale of commodities in raw form is influenced by several things both before and during the pandemic. For example, for vegetables, initially not all of them were for sale, because the orientation was to be free to the members itself and local residents who were in need. Likewise, fruit is also rarely cashed out, especially those whose harvest cycle is months or even years. Medicinal plants are also not cashed out because they are usually only shared among members or to make drinks for visiting guests. However, the production of vegetables, fruits, and medicinal plants increases significantly at harvest time, so they can be sold, leading to an increase in the group's cash. The sale of relatively large quantities of seedlings during the harvest season further increases the Group's cash position. In addition, the GRFG is working to expand raw vegetable sales by partnering with distributors who supply raw vegetables to restaurants and hotels in Yogyakarta City. According to the GRFG administrators and members, some of the product's sales in their raw form do not yield much, but at least they can cover the monthly electricity costs of the farm of around IDR 500,000 per month. Revenue from the farm is obtained after being used to finance land needs such as the purchase of sand media, fertilizers, and others. As a summary, the total revenue and cost of the Group are shown in Table 4.

The total revenue of the GRFG from raw products for a month is around IDR 5,454,000 as an accumulation of vegetable and fruit harvest receipts if cashed per month. This total income is then used for farm operational costs again such as the cost of AB Mix fertilizer, soil media, seeds, rockwool, electricity, unexpected costs such as repairing the pump and its workers or costs if there are guest visits with an estimate of around Rp 4,724,000. From this amount of revenue, after being used for operations again, the estimated remaining cash balance of the garden is IDR 730,000 per month. It is worth mentioning that the sales of catfish are not included in the cash balance of the group as they are owned by the person who manages the catfish farm since he is willing to be responsible for all the steps of catfish farming including daily maintenance and feeding.

In addition to the revenue obtained from raw sales, as the GRFG is increasingly recognized by the wider community, more outside parties come to visit for education and learning purposes. From these visits, there is usually money given by the guests so that the results can be shared among members after deducting the costs of dishes and processed demonstration materials. The income received by each member per visit is usually around IDR 25,000-100,000 depending on the amount of money coordinated with the guest in one visit and the number of visits received per month. From these rates, the revenue of each active member can be around IDR 100,000-300,000 per month (if there are 2-6 visits with participants between 30-100 people per visit). In general, the GRFG charges about IDR 25,000-50,000 per person for the visit package, which includes a snack, the services of the trainer (about IDR 500,000), and income for the GRFG members. However, under special conditions (e.g., for those who do not have the financial means), the GRFG will waive the fee for the visit.

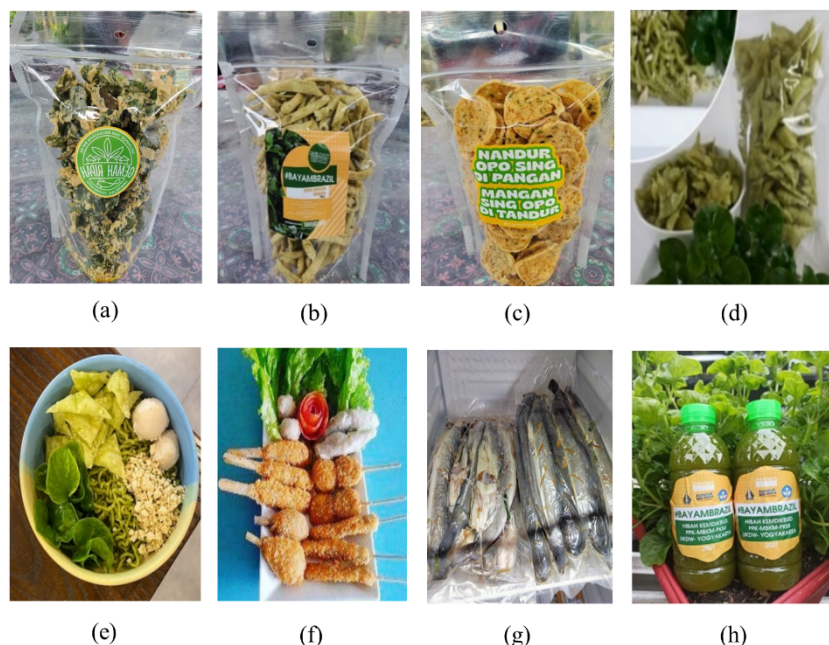


Fig. 6. Some processed products of the GRFG during harvesting: (a) Brazilian spinach chips, (b) Brazilian spinach sticks, (c) Fried vegetable meatballs, (d) Brazilian spinach “pangsit”, (e) Yammie Brazilian spinach, (f) Vegetable nuggets, (g) Frozen marinated catfish, (h) Brazilian spinach juice.

The cash income of individual members of the GRFG during the pandemic was supported by their success in managing processed products from urban farming cultivation (see Fig.6). Because their main profession had to stop during the pandemic, their contribution in the processed product business turned out to be very helpful as an additional income, and some could even replace the main profession in the family that was previously stopped during the pandemic. The success of the processed product sales is strongly supported by the marketing targets that are actively carried out by all administrators and members. Targeted consumers are mainly local residents and guests who visit through a direct selling system, door to door, storefronts at home, stalls, ankring, school canteens, or come directly to the storefront on the land. In addition, it is also through social media such as Facebook, Instagram, WhatsApp which is intensively carried out by some of its members. With the coordinator of the chairman, during Covid they also continuously participated in the farmers market event every Friday and exhibitions held by the Yogyakarta City Food Crop Agriculture Office or certain events even though with strict health protocols. Even now they have an offer to supply semi-finished snack

ingredients to one of the large supermarkets in Yogyakarta. The cash income from this processed product business is managed by each member so that the profits also belong directly to the individual. This business then helps some individual members during pandemic as the main income as a husband or a wife.

The total cash income received by the members from the processed products sales ranging from IDR 512,880-5,020,000. The profit from each processed product ranges from 19-62% of the product sales (revenue). As a form of commitment to the group, it is applied to members that if marketing through group intermediaries, it is required to set aside part of the sales profit of Rp 1,000 for products less than the price of Rp 10,000 and Rp 2,000 for prices above. With the existence of processed products from this urban farming, most members represent proactive social energy power for their high initiative and activeness in urban farming cultivation activities. This is in line with the accuracy in reading market opportunities that are developing dynamically during the pandemic. The empowerment and ability of members to take advantage of business opportunities from urban farming cultivation to be managed into a processed product business that is packaged economically with a label or slogan of the farmer group so that it has higher selling power.

The net income each month is obtained from the sale of processed products after deducting the production costs, such as the purchase of flour, cooking oil, seasonings, packaging, stickers and other necessary raw materials. In the end, the impact of urban farming can be analyzed by approaching the income of individual members during the pandemic. The total individual income of the GRFG members during the pandemic from the sales of the processed products and the income from educational tourism services (i.e., IDR 0.3 million) was around IDR 0.8-5.3 million. From the GRFG, it can be concluded that urban farming can directly benefit both together and individually as illustrated in Fig.7. it can be concluded that the existence of urban farming can contribute to helping save kitchen expenditures, even as cash income from the sale of raw and processed forms of food products that have higher selling power coupled with member income from each visit per month.

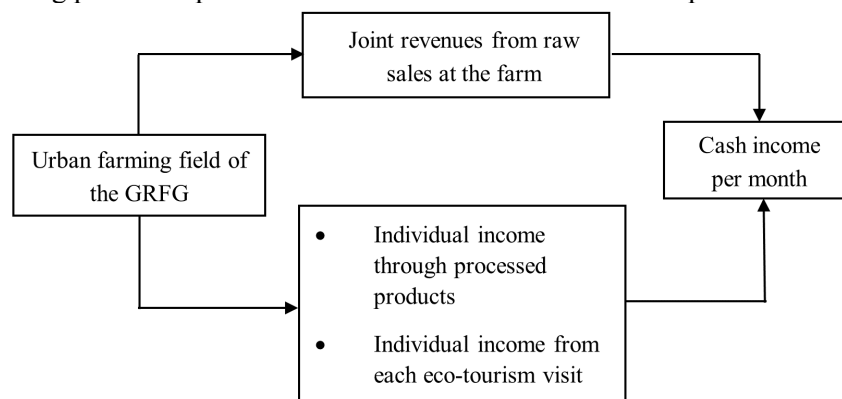


Fig. 7. Contribution of urban farming to generate cash income.

IV. Conclusion

The implementation of urban farming by the GRFG is carried out to be able to support the realization of the ideals and vision of the group, especially the resilience of life during Covid-19 pandemic. The results also applicable after the pandemic. The existence of the GRFG land has proven to be able to maintain food. Although the vision has not been fully realized, the implementation of urban farming in this group is considered effective as an alternative solution to providing and maintaining food. Even though some people think that it does not fulfill the daily consumption of food optimally, it can at least help residents before and during Covid to be ready to pick at any time from their own land and to be able to continue eating vegetables. This is evidenced by the estimated consumption of members and the community from the GRFG being able to contribute around 62% compared to the consumption still needed from outside the land by 38%. The GRFG land is also proven to be able to provide additional cash income. The existence of urban farming can be felt directly in helping to save on shopping expenses. With the superior commodity of Brazilian spinach, it can help the cash income of the GRFG members from the sale of fresh forms and processed products that are packaged into higher selling values for additional cash income with a profit of around 19%-62%, as well as from educational tourism services which in turn can contribute to strengthening the community's economy.

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