

Implementation of Urban Farming to Achieve Sustainable Development Goals (SDGs) in Sampangan Sub-District

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ABSTRACT

Indonesia's food availability is threatened with a crisis and it will affect food security, especially in the big cities. Semarang City has created a program to increase agricultural activity named "Ayo Nandur" (Let's Garden). This program aims to improve community planting habits and maintain food security. The aim of this research is to find out the implementation of urban farming in Sampangan Sub-district, namely in Puspitasari Women Farming Group (KWT) and Mina Garden Spirit Farming Group. The population in this research includes Head of Sampangan Sub-district, urban farming administrators, and the people involved in the urban farming activities in the area. This study uses a purposive sampling. The data was compiled using the method of observation, interviews, documentation, and questionnaires. The results of this research show that the role of urban farming is very important since it is able to create urban agricultural areas with the principle of using environmentally friendly yards to fulfill family nutrition, increase income, and improve welfare through community participation, as well as strengthening groups to become strong and independent organizations.

Keywords: Urban Farming, Sustainable Development Goals (SDGs)

INTRODUCTION

Indonesia's food availability is threatened with a crisis and it will affect food security, especially in big cities. Therefore, it is necessary to create food security in Indonesia

in general and the administrative area of Semarang City in particular by encouraging many agricultural communities. Semarang City has created a program to increase agricultural activity named "Ayo Nandur" (Let's Garden). This program aims to improve people's planting habits and maintain food security. There are 530 urban farming groups which have been formed in Semarang City, of which 415 are general farming groups and 115 are women farming groups. This is in line with the second Sustainable Development Goals (SDGs), namely ending hunger, achieving food security, improving nutrition, and promoting sustainable agriculture (Bapennas, 2017). Sustainable development carries economic, social and environmental indicators (Fauzi, 2014). Based on the geographical aspect, the indicators of sustainable development cannot be separated for they include geographical material objects. One of the sustainable developments which can be applied to urban areas is an urban farming system.

Urban farming is the use of narrow land in urban areas (Wardah et al, 2020; Sinaga, 2022; Wiyanti; 2013). The urban farming system is one of the programs of the Semarang City Government to increase food security in Semarang City as the goal of the second Sustainable Development Goals (SDGs), namely Zero Hunger. The basis for establishing urban agriculture is based on the Mayor of Semarang's regulation Number 24

of 2021 concerning the movement to cultivate urban agriculture in the City of Semarang. Urban farming is an innovation which now has become a culture in urban areas, including Sampangan Sub-district, namely in KWT Puspitasari Urban Farming Group and Mina Garden Spirit Group. This is in line with the diffusion of innovation theory which is the result of a study by Hartanto et al (2022) and Ahmad, R., (2016) which states that the diffusion of innovation is a theory that describes how, why, and to what extent an idea and technology can be spread and then be absorbed by an already organized culture.

This urban farming system plays a role in increasing food security in Sampangan Sub-district. This is in line with the results of research from Diehl et al (2019) which states that participation in urban agriculture has a positive impact on household food security. Another study also states the same thing, namely a study from Zezza & Tasciotti (2010) stating that urban agriculture can help increase food security by increasing the quantity, quality, and diversity of food.

The urban farming system has many benefits. Some of the benefits of urban farming are (1) increasing of income; (2) employment opportunities; (2) optimization of urban space. The huge potential of urban farming in creating sustainable Development Goals (SDGs) is an attraction for researchers to research further about the implementation of urban farming in Sampangan Sub-district.

MATERIALS & METHODS

The purpose of this research is to find out the implementation of urban farming in Sampangan Sub-district. This research uses a qualitative approach design. Using a quantitative approach, it is hoped that comprehensive, valid, reliable and objective data is gained (Sugiyono, 2017). The data produced through this approach is the implementation of the urban farming system in RW II (Mina Garden Spirit Group) and RW III (Puspitasari Women Farming Group (KWT), how the knowledge, skills and attitudes of the urban farming group are and

how urban farming is implemented. This research will attempt to explain clearly the implementation of the urban farming system in Mina Garden Spirit Urban Farming Group and Puspitasari Women Farming Group (KWT). Sources of data in this study are secondary and primary data. The data analyzed was obtained from observations, interviews and documentation. The population in this research includes the Head of Sampangan Sub-district, urban farming administrators, and the people involved in the urban farming activities. Sampling used in this study is purposive sampling, namely a sampling technique with certain considerations. Sampling of the sub-district head was taken with a consideration that the leader has a strong contribution in the formation of urban farming. The next sample is people who carry out urban farming, namely RW II (Mina Garden Spirit Farming Group) and RW III (Puspitasari Women Farming Group (KWT). (P.S. RW is a community unit consists of some neighborhood units)

STATISTICAL ANALYSIS

The data analysis technique used in this research is a percentage frequency analysis. Data in quantitative research will be analyzed using percentage frequency with the following steps:

1. Rough data collected from the field is available
2. Rough data is arranged from the smallest value to the largest value or vice versa from the largest value to the smallest value
3. The number that expresses the amount of data is called frequency
4. The percentage frequency is calculated using the following formula:

$$\text{Percentage Frequency} = \frac{\text{frekuensi kelas } i}{n} \times 100\%$$

Description:

Kelas i (Class i) = Total data in a certain category

Nn = Whole Total data

5. The data is distributed in a tabular form. The general form of the frequency distribution table is as follows:

Table 1 Frequency Distribution

No	Class (Category)	Frequency
1	1st Class/ 1st Category	F1
2	2nd Class/ 2nd Category	F2
3	3rd Class/ 3rd Category	Fk
4	Total (Σ)	N

RESULT

1. Knowledge of the KWT Puspitasari and Mina Garden Spirit Urban Farming Groups

Table 2 Knowledge of Urban Farming Group

Score Interval	Percentage	Criteria	F	%
45-56	76 – 100	High	34	94, 44
30-44	51 – 75	Medium	2	5, 56
15-29	26 – 50	Low	0	0
0-14	0 – 25	Very Low	0	0
Total			36	100

Source: Research Data, 2023

The urban farming groups, namely Mina Garden Spirit Farming Group and Women Farming Group KWT Puspitasari, have good knowledge about the importance of urban farming to increase food security. The KWT Puspitasari Urban Farming Group has known that having good plants starts with selecting good seeds, because seeds will affect the quality of the plants produced. These urban farming groups also know that good maintenance is starting from tillage or hydroponic land, watering, needed water nutrition, and fertilization to prevent or even overcome plant pests.

2. The Behavior of KWT Puspitasari and Mina Garden Spirit Urban Farming Groups

Based on the research results, the behavior of the members of KWT Puspitasari and Mina Garden Spirit urban farming groups, on average, is in the high category. As many as 32 members of the urban farming groups are included in the high category, or when presented, it reaches 88.89%. While 11, 11% or as many as 4 members have moderate

behavior. The behavior criteria for the urban farming members can be seen in Table 3.

Table 3 Urban Farming Group Behavior

Score Interval	Percentage	Criteria	F	%
30-36	76 – 100	High	32	88,89
20-29	51 – 75	Medium	4	11,11
Okt-19	26 – 50	Low	0	0
0-9	0 – 25	Very Low	0	0
Total			36	100,00

Source: Research Data, 2023

The behavior of the urban farming members of Puspitasari Women Farming Group (KWT) and Mina Garden Spirit is good, since the members are aware of the need to learn and understand urban farming. Members of the urban farming groups also realize the need of knowing the importance of maintenance to prevent pests threatening the plants. The importance of using organic fertilizer has also been realized by the members of the urban farming groups.

3. The Attitude of the Members of the Urban Farming Group (KWT) Puspitasari and Mina Garden Spirit

The attitude of the members of the urban farming group KWT Puspitasari and Mina Garden Spirit is categorized as high, namely with a percentage of 92% or a total of 33 urban farming members, both KWT Puspitasari and Mina Garden Spirit. While those who have a moderate attitude category are 3 people or presented by 8%. This shows that the Urban Farming Group in Sampangan Sub-district has a good response to sustainable agricultural programs.

Table 4 Attitudes of the Urban Farming Group

Score Interval	Percentage	Criteria	F	%
38-48	76 – 100	High	33	92
25-37	51 – 75	Medium	3	8
13-25	26 – 50	Low	0	0
0-12	0 – 25	Very Low	0	0
Total			36	100

Source: Research Data, 2023

The urban farming groups, both KWT Puspitasari and Mina Garden Spirit, are willing to accept, respond, respect and be responsible for the urban farming programs. The urban farming groups understand that the urban farming system is a sustainable agriculture which, if managed properly, can

increase family household income. On urban farming land, urban farming groups can maximize existing land by planting more than one type of plant in the land. The urban farming groups, both KWT Puspitasari and Mina Garden Spirit, realize that urban farming can reduce food crises. The attitude of the urban farming group is in line with the knowledge they have. Maintenance of urban agriculture from cultivating the soil, fertilizing, and treating pests has been carried out by KWT Puspitasari and Mina Garden Spirit urban farming groups.

4. Implementation of Urban Framing in Sampangan Sub-district

Urban farming is one of the programs of the Semarang City government to increase food security in the City of Semarang as the goal of the second Sustainable Development Goals (SDGs), namely Zero Hunger. The basis for the formation of urban agriculture is based on Semarang Mayor Regulation Number 24 of 2021 concerning the urban agricultural civilization movement in Semarang City.

The history of the urban farming system in Sampangan Sub-district was first formed in 2018, to be precise, on November second 2018 for urban farming in RW III, namely Wanita Tani (KWT) (Women farmers) Puspitasari. Meanwhile, urban farming which is located in RW II, namely Mina Garden Spirit, was established in 2019 with Mr. Solekhan as the chairman. In urban farming in RW III there is Mrs. Aryani as the head of the Puspitasari Women Farming Group (KWT). The determination of urban farming was approved by the Sampangan Sub-District in accordance with Sampangan Sub-District Head Decree No. 520/20/XI/2021.

The basis for the formation of urban farming is based on Government Regulation Number 17 of 2015 concerning Food security and Nutrition. Furthermore, It is also based on Presidential Regulation Number 22 of 2009 concerning the policy of accelerating food diversification based on local resources. The establishment of urban farming in

Sampangan Sub-district has the aim of creating an urban agricultural area with the principle of using environmentally friendly yards to fulfill family nutrition, increase income, and increase welfare through community participation, as well as strengthening groups to become strong and independent organizations.

The urban farming system implemented in RW III or by Puspitasari Women Farming Group (KWT) uses hydroponic system and conventional media. These systems were chosen because it is easier. Apart from that, it also utilizes a vertical garden considering that the land owned is small. In contrast to RW III, RW II, namely Mina Garden Spirit, does not apply hydroponics but uses a conventional planting system, which is using soil, pots, and poly bags as media

The types of plants cultivated are vegetables and fruits. The types of vegetables cultivated by the urban farming groups of KWT Puspitasari and Mina Garden Spirit are watercress, bok choy, kale, spinach, tomatoes, eggplant, beans, cauliflower, etc. In urban farming, Mina Garden Spirit also cultivates catfish. Productivity which stands out in the Women Farming Group (KWT) Puspitasari is the vegetables. Meanwhile, in the Mina Garden Spirit Farming Group, the productivity which stands out is the fish.

The application of urban farming by the Women Farming Group (KWT) Puspitasari and the Mina Garden Spirit Farming Group includes land preparation, seeding, planting, and harvesting.

1) Land Preparation

Land preparation is the main thing to do to form urban farming. The land in Sampangan Sub-district is the waste soil from the remains of buildings, so it needs to be processed first according to operational standards (SOP) from the agricultural service. Soil processing like this is quite difficult to cultivate. Land according to urban farming standards is 30 cm deep and below, it must be pure soil, and there should be no cement layer. This is because it affects the quality of the soil. To create good quality land ready for

planting, Sampangan Sub-district purchased good quality soil to replace the waste soil from the remains of buildings. The urban farming group KWT Puspitasari uses hydroponic, aquaponic, tabulampot (fruit plants in pots) and soil media. So the preparation of the land is to prepare hydroponic media, aquaponics, and pots.

2) Seeding

Seeding is a very important process since it will affect the quality of the plant seeds. Seeding is a process of preparing plant seeds

before the plants are planted in the planting area. The initial seeding is in collaboration with the Department of Agriculture as the supplier of plant seeds. The department only facilitates it at the beginning, whereas once urban farming is underway, they must be able to produce independently. Seeding is a very important process to get good plants, hence the seeds used must be good. The plant seeds used will affect the quality of the plants produced. The farming group in Sampangan Sub-district, KWT Puspitasari to be precise, can produce their own crop seeds.



Figure: Seeding done by the Women Farming Group (KWT) Puspitasari
Source: Research Data, 2023

Cultivations carried out by the urban farming groups of KWT Puspitasari and Mina Garden Spirit are vegetables and fish. The planting system is carried out in rotation according to the consumption needs of the surrounding community. Some planting is done using hydroponic, aquaponic, pot, and soil media systems. The types of vegetables grown by the urban farming groups of KWT Puspitasari and Mina Garden Spirit are bok choy, watercress, kale, spinach, eggplant, etc.

3) Maintenance

Maintenance is a very important process and must be well-done. Plant maintenance has been carried out by the farming groups in Sampangan Sub-district, namely from the

Pupitasari Farming Group and the Mina Garden Spirit Farming Group, by watering regularly every day. Watering is done in the morning and evening. This watering is carried out by all urban farming members, both from KWT Puspitasari and Mina Garden Spirit groups, using a rotating system according to schedule.

Another maintenance which also needs attention is maintaining the plant from pest attacks. Plants affected by pests will decrease in quality. The preventive action taken by the urban farming groups is by fertilizing. The fertilizers used by the urban farming groups in Sampangan Sub-district are organic and chemical fertilizers. However, in comparison, there are more organic fertilizers than

chemical fertilizers. Chemical fertilizers are used when it is very urgent. Besides that, water nutrition must be considered and nutrition must be according to what is needed.

4) Harvesting

Harvesting is carried out once a week, every Sunday, vegetable harvesting is carried out. This is because KWT Puspitasari has planted vegetable plants at different times so that harvesting can be done every day. The harvest time for vegetable crops varies depending on the type of plant. The harvest period for plants can be seen in the table below.

Table 5 Harvest time for vegetables

No	Vegetable	Harvest Time
1	Water Spinach	21-25 After Planting
2	Spinach	25-30 After Planting
3	Bok Choi	40-45 After Planting
4	Lettuce	30-40 After Planting
5	Eggplant	70-80 After Planting

Source: Research Data , 2023

The vegetable harvested from KWT Puspitasari are sold in the surrounding area or consumed by the management themselves. Vegetable production in this urban farming group in one week can reach twenty kilograms. Meanwhile, in the Mina Garden Spirit Group, the harvest has not yet reached the stage of selling crops. Vegetable yields in this group are still at the consumption stage for the management of this urban farming group. This is because productivity is still limited and land has not been maximized.



Figure: Vegetable Harvesting by KWT Puspitasari
Source: Women Farming Group (KWT Puspitasari)

Productivity of vegetables in the urban farming group of Mina Garden Spirit is not as much as KWT Puspitasari where the Mina Garden Spirit Group still produces the crops for their own consumption. However, the Mina Garden Spirit Group has superior productivity in the field of fisheries, namely catfish cultivation. Harvesting catfish is relatively fast, which is around 2.5 months to 3.5 months. The harvest cycle depends on the quality of the seeds used, the better the quality of the fish seeds, the faster the harvest cycle. Good seeds are usually 5-7 cm in size so the harvest cycle is fast.



Figure: Catfish Harvesting
Source: Mina Garden Spirit Urban Farmer Group

DISCUSSION

The results of the study show that in the urban farming system implemented by Puspitasari Women Farming Group (KWT) and Mina Garden Spirit Group, the types of plants planted were in accordance with the preference of the groups or according to the needs of the surrounding environment. This is the same as the research results of Ilvira et al (2020) and Pasha et al (2014) which suggest that the implementation of the urban farming concept can further optimize the use of limited land and the selection of plant types to be planted is based on the need of the community.

The results of this research also show that urban farming groups has a very important role in the running of urban farming in Sampangan Sub-district. The liveliness of

urban farming members will influence the running of urban farming activities. The results of this study provide a lesson that the existence of urban farming group members is very important for the functioning of the urban farming system.

The results show that urban farming groups, both the Women Farming Group (KWT) of Puspitasari and Mina Garden Spirit Group, have attitudes, knowledge, and behaviors showing that they are protecting the environment. This is in line with a research from Indarayati et al (2013) and Purmadi et al (2020) which states that conservation education is a learning that has the goal of making or increasing an individual's awareness in terms of behavior, attitudes, and ways of thinking about protecting the environment, as well as having skills in managing natural resources and existing ecosystems so that existing resources are not extinct and can be enjoyed by the next generation (Indrayati, 2013), (Purmadi et al., 2020). Other research which is in line with the idea that conservation education includes cognition of attitudes and behavior is put forward by Banowati & Suharini (2021).

CONCLUSION

The results of this research show that urban farming is one of the programs of the Semarang City Government to increase food security in Semarang City as the aim of the second Sustainable Development Goals (SDGs), namely Zero Hunger. The establishment of urban farming in Sampangan Sub-district is very important because it creates an urban agricultural area with the principle of using environmentally friendly yards to fulfill family nutrition, increase income, and improve welfare through community participation, as well as strengthening groups to become strong and independent organizations.

Declaration by Authors

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REFERENCES

1. Ahmad, R. (2016). Difusi Inovasi Dalam Meningkatkan Partisipasi Masyarakat Akan Kelestarian Lingkungan. *Sosietas*, 6(2). <https://doi.org/10.17509/sosietas.v6i2.4244>.
2. Banowati, E., & Suharini, E. (2021, November). Forest Conservation Education in Tlahap Agroforestry on The Slope of Mount Sindoro Central Java Indonesia. In *6th International Conference on Science, Education and Technology (ISET 2020)* (pp. 442-446). Atlantis Press.
3. BAPPENAS. Laporan Baseline SDG tentang Anak-Anak di Indonesia, Kementerian Perencanaan Pembangunan Nasional (Bappenas) dan United Nations Children's Fund 1–105(2017).https://www.unicef.org/indonesia/id/SDG_Baseline_report.pdf.
4. Diehl, J. A., Oviatt, K., Chandra, A. J., & Kaur, H. (2019). Household food consumption patterns and food security among low-income migrant urban farmers in Delhi, Jakarta, and Quito. *Sustainability*, 11(5), 1378.
5. Fauzi, A. R., Ichniarsyah, A. N., & Agustin, H. (2016). PERTANIAN PERKOTAAN : URGENSI, PERANAN, DAN PRAKTIK TERBAIK Urban Agriculture : Urgency, Role, and Best Practice Ahmad Rifqi Fauzi1)*, Annisa Nur Ichniarsyah1), Heny Agustin1) 1) Program Studi Agroekoteknologi, Universitas Trilogi, Jakarta Jalan Kampus Tri. *Jurnal Agroteknologi*, 10(01), 49–62.
6. Hartanto, C. F. budi, Octavianus, S., & Paduppai, A. M. (2022). Kesiapan Sumber Daya Manusia Pendidikan dalam Difusi Inovasi Teknologi Informasi di Lembaga Pendidikan, 1412–1417.
7. Ilvira, R. F., Ginting, L. N., & Hasibuan, S. (2020). Peningkatan Pengetahuan Konsep *Urban farming* Pada Siswa SMA Negeri 1 Labuhan Deli Kabupaten Deli Serdang. *Jurnal Hasil Pengabdian Kepada Masyarakat*, 1(1), 156–164.
8. Indrayati, A. (2013). Peningkatan Ketahanan Terhadap Risiko Bencana Melalui Pendidikan Konservasi Lahan Berbasis Masyarakat Di Dataran Tinggi Dieng. *Jurnal Geografi*, 10(2), 154–166.
9. Pasha, R. F., Widyaningsih, S., Rijanta, R., Hijau, K., & Yogyakarta, K. (2014). Identification of *urban farming* in the green

- kampung. *Jurnal Tata Kota dan Daerah*, 6(1), 63–72.
10. Purmadi, R. M., Santika, D. M. J., & Wulandari, A. S. (2020). Pentingnya pendidikan konservasi untuk menjaga lingkungan hidup (studi kasus di Desa Cidahu , Kabupaten Kuningan). *Jurnal Pusat Inovasi Masyarakat*, 2(4), 602–606.
11. Wardah, O. A. N. (2020). Strategi Ketahanan Pangan Dalam Program *Urban farming* Di Masa Pandemi Covid-19 Oleh Dinas Ketahanan Pangan Dan Pertanian Kota Surabaya Olivia Agustin Nailatul Wardah Fitrotun Niswah Abstrak, 9 Nomor 1, 145–160.
12. Wiyanti, A. N. (2013). Implementasi program *urban farming* pada kelompok
- Sumber Trisno Alami di Kecamatan Bulak Kota Surabaya. *jurnal Republika*, . 1(2), 1-, .
13. Zezza, A.; Tasciotti, L. (2010). Urban agriculture, poverty, and food security: Empirical evidence from a sample of developing countries. *Food Policy* 2010, 35, 265–273.

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