# Study of South Tambun District Community Acceptance on Integrated Fish Farming Method during Pandemic

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## ABSTRACT

*The purpose of this activity is to provide information and insight about the benefits of integrated bucket fish farming to the community in maintaining food security during the pandemic, and to increase public interest and potential in carrying out integrated bucket fish farming activities. The activities were carried out by distributing questionnaires or surveys to the people of South Tambun District. Based on the data from the questionnaire survey that has been distributed to 40 respondents, the interest of the people of South Tambun District towards integrated bucket fish farming activities is quite high but in its application it is still low. Things that can be done to increase public interest in carrying out integrated bucket fish farming activities are by providing information about integrated bucket fish farming in an appealing and motivating method.*

**Keyword:** *integrated fish farming, pandemic, South Tambun*

## 1. INTRODUCTION

Currently, all citizens of the world are still being hit by the Covid-19 pandemic, where the number of sufferers has risen yet again. The Covid-19 pandemic has had an impact on the entire community, both in the fields of health, education, and the economy as well. The government has taken various ways to suppress the spread of the Covid-19 virus, one of which is by imposing policies that limit activities or activities outside the home. However, this has a negative impact on the social and economic aspects of the state and also for the society. Restrictions on activities outside the home have triggered many community activities to be hampered so that people find it difficult to meet their daily needs. This can have an impact on the fulfillment of family food necessities.

In this situation, the community are required to be keen in looking for opportunities and considering for other alternatives, especially in maintaining family food security. One solution that the community can accomplish during the pandemic is to carry out urban farming activities. Urban farming is a municipal farming technique with the concept of farming on limited land. According to [1] and [2], the agricultural sector plays a role in providing food and job opportunities, as well as playing a role in overall economic development thus, it can be chosen as a main or side source of income during the Covid-19 pandemic.

Fish cultivation in buckets (integrated fish farming in buckets) or locally known as "budikdamber" is an urban farming activity with an aquaponics system, where fish and plants can be cultivated in one place or in maintenance container simultaneously [3]. This activity is very appropriate to be carried out in current conditions because the concept is very simple and does not require a large investment or budget. Making integrated bucket fish farming also does not require a large area of land because it only requires one (or more) large bucket as the medium. Integrated bucket fish farming has the potential in providing family food necessities such as animal protein source, also healthy and fresh vegetables for consumption. This activity can also viewed as a business opportunity and assist in increasing family's revenue through the sale of the produced product. South Tambun District is one of the most densely populated areas with the largest population among other sub-districts in Bekasi Regency. It is recorded in

2019 that the South Tambun sub-district has a population of 389,040 [4] which assume has a considerable amount of workforce per its population.

Integrated bucket fish farming activities can save water usage, do not require electricity, and can increase the efficiency of nutrient utilization from leftover feed and fish metabolism. The water given to each planting media container through the top will later be distributed so that it can become nutrients for fish that are also being cultivated. In addition, integrated bucket fish farming can also help protect the environment by utilizing used materials such as plastic cups as planting media. According to [5], aquaponic system fish farming in principle saves land use and increases the efficiency of nutrient utilization from leftover feed and fish metabolism. Because of the many benefits generated, the integrated bucket fish farming activities have the potential to be developed by the community and could be a spare time filler activity during this pandemic.

## 2. MATERIALS AND METHOD

This community service activities is carried out by distributing questionnaires or surveys to the people of South Tambun District, Bekasi, Indonesia. However, due to the situation and conditions of the Covid-19 pandemic, it is not possible to distribute the questionnaire directly, therefore the questionnaire was distributed online using the Google Form application which contains questions about integrated bucket fish farming.

Google Form is a web-based application that can provide responses to questionnaires briefly and can be accessed by using the internet from a computer or cellphone [6]. The advantages of using the google form are that it is easy to use, does not require paper, saves time, is fast, can distribute questionnaires to respondents who are located far apart, has an attractive appearance, and the results can be arranged and analyzed automatically. The purpose of filling out a questionnaire in the form of a google form is to find out initial information about the insights of the people of South Tambun District related to the method of integrated bucket fish farming.

## 3. RESULTS AND DISCUSSION

From the results of processing questionnaires that have been distributed for 6 (six) days, 40 respondents were obtained who are residents of South Tambun District, Bekasi Regency, West Java. The data obtained will then be discussed into four parts, namely profile, insight, application, and respondents' interest.

### 3.1 Respondent Profile

The criteria for respondents who are the source of data for filling out this questionnaire are the residents of South Tambun District, Bekasi Regency, West Java. Total respondents amounted to 40 respondents with a total percentage of 100%.

Table 1. Distribution of respondents participating in research activities through questionnaires

| Variables | | Frequency | Percentage |
|---|---|---|---|
| Gender | Female | 13 | 33% |
| | Male | 27 | 68% |
| Year of birth | <1990 | 2 | 5% |
| | 1990-2000 | 6 | 15% |
| | 2001-2010 | 32 | 80% |
| | >2010 | 0 | 0 |
| Education | Elementary School | 1 | 2.5% |
| | Junior High School | 2 | 5% |
| | High School | 11 | 27.5 |
| | Bachelor | 26 | 65% |
| Occupation | Students | 34 | 85% |
| | Private sector employee | 4 | 10% |
| | Entrepreneur | 1 | 2.5% |
| | Housewife | 1 | 2.5% |

Based on Table 1, it can be seen that the respondents were dominated by female, namely 27 people (68%), while the number of male respondents was 13 people (33%). In addition, based on the year of birth, the majority of respondents had a birth year between 2001-2010, namely 32 people (80%), followed by respondents with a birth year 1990-2000 as many as 6 people (15%), and under 1990 as many as 2 people (5%). Most respondents have the latest education or are currently undergoing Bachelor's degree education as many as 26 people (65%), followed by respondents with high school education as many as 11 people (27.5%), junior high school as many as 2 people (5%), and elementary school as much as 1 person (2.5%). Meanwhile, based on their occupation, most of the respondents were among students, namely 34 people (85%), followed by 4 private employees (10%), 1 entrepreneur (2.5%), and 1 housewife (2.5%).

**3.2 South Tambun Community Comprehensions Regarding integrated bucket fish farming**

Based on the results of the questionnaire data that has been distributed, it can be seen that out of 40 respondents from the South Tambun sub-district, 15 respondents (38%) know about fish farming using the integrated bucket fish farming method. This can be caused by fishery activities such as fishing or catfish farming in the neighborhood around the respondent's residence so that integrated bucket fish farming's activities are familiar. However, most of the respondents, namely as many as 25 people (62%) did not know about fish farming using the integrated bucket fish farming method. These data indicate that the majority of the people of Tambun Selatan Sub-district have not known about the insights and information regarding integrated bucket fish farming activities

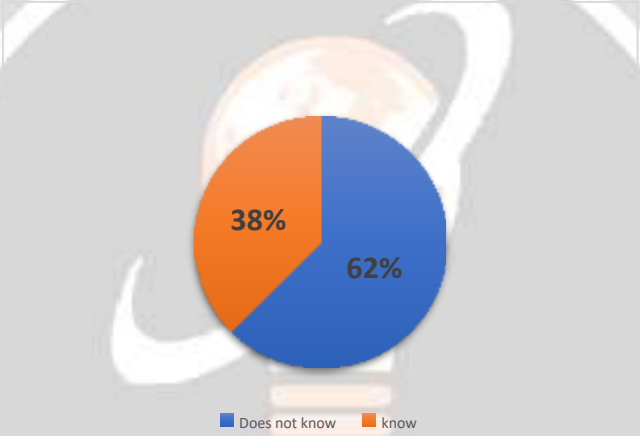


Figure 1. Public knowledge and insight about integrated fish farming in a bucket

Nevertheless, respondents who filled out the questionnaire became more aware of integrated bucket fish farming's activities. This is indicated by the number of respondents who know the types of fish and vegetables that can be cultivated using the integrated bucket fish farming method. Most of the respondents answered catfish and water spinach as types of fish and plants that can be cultivated using the integrated bucket fish farming method. Other types of fish mentioned are carp, snakehead fish, carp, betok fish, and catfish, while other types of plants that are also mentioned include spinach, mustard greens, and pakcoy.

**3.3 Application of integrated bucket fish farming in South Tambun District Community**

Based on the questionnaire data, as many as 30 respondents (75%) stated that there were no integrated bucket fish farming activities in the surrounding environment, while as many as 10 respondents (25%) stated that there were communities around them who carried out integrated bucket fish farming activities. From these data, it can be seen that the application of integrated bucket fish farming activities in Tambun Selatan District is still very little and has not been maximally implemented. In its implementation, integrated bucket fish farming activities can also may not run efficiently. As many as 3 out of 10 respondents who had integrated bucket fish farming activities in their vicinity answered that the integrated bucket fish farming activities carried out did not run efficiently. This could be due to a lack of knowledge about integrated bucket fish farming's activities.

Integrated bucket fish farming activities have various benefits in everyday life. Most of the respondents, as many as 18 people (45%) thought that integrated bucket fish farming's activities could be useful as a solution for food production on limited land. While 10 respondents (25%) agreed that integrated bucket fish farming could be a positive activity during a pandemic, 7 respondents (18%) agreed that integrated bucket fish farming could be a

profitable business, and 5 respondents agreed that integrated bucket fish farming could help meet the protein needs of the family.

**3.4 Community's Interest in South Tambun District for integrated bucket fish farming Activities**

Based on the data from the questionnaire, 17 respondents (42%) were interested in doing integrated bucket fish farming activities at home. However, as many as 23 respondents said they were not interested in carrying out integrated bucket fish farming activities. This can be caused by limitations such as time, knowledge, property area, and investment. Of the 23 respondents who expressed their disinterest in carrying out integrated bucket fish farming activities at home, as many as 10 people (43%) experienced problems in terms of knowledge about integrated bucket fish farming. Meanwhile, 6 people (26%) experienced time management constrain, 2 people (9%) experienced that they have limited area, 2 people (9%) experienced limited investment, and 3 people (13%) said they were not interested or chose not to answer.

All of the respondents to the questionnaire (100%) agree that integrated bucket fish farming activities have the opportunity in the community as a source of family protein and/or improve the economic condition of the community. Seven statements were given in the questionnaire about integrated bucket fish farming. Statements are given in the form of a Likert scale consisting of 5 scale options, including: Strongly Agree (5), Agree (4), Neutral (3), Disagree (2), and Strongly Disagree (1). With the assessment index as follows:

- Index 0% - 19% = Strongly Disagree
- Index 20% - 39% = Disagree
- Index 40% - 59% = Neutral
- Index 60% - 79% = Agree
- Index 80% - 100% = Strongly Agree

In the first statement, namely regarding the usefulness of carrying out integrated bucket fish farming activities, the results showed that the average respondent's response was 4,525 from a maximum value of 5 or 91%. From these results it can be concluded that the people of South Tambun District strongly agree that the integrated bucket fish farming activities are very useful to carry out. Integrated bucket fish farming has many benefits in providing family food such as animal protein, healthy and fresh vegetables for consumption, and can be considered as a business opportunity to help increasing the family's income.

The second statement is about integrated bucket fish farming activities that can help meet the protein needs of the family. The results show that the average respondent's response is 4,375 from a maximum value of 5 or 88%. From these results it can be concluded that the people of South Tambun District strongly agree that integrated bucket fish farming activities can assist to meet the protein needs of the family. The types of fish that can be cultivated in integrated bucket fish farming such as catfish have a lot of nutritional content with high protein and very low saturated fat content. In addition, catfish also contains Omega-3 and Omega-6 fatty acids that are essential for the body. Therefore, catfish is a very healthy fish for public consumption.

In the third statement, which is about the public's interest in starting to apply integrated bucket fish farming at home, the results are the lowest compared to other questions, namely with an average of 3,275 from a maximum value of 5 or 66%. These results indicate that the people of South Tambun District agree or are interested in starting to implement integrated bucket fish farming activities at home. The percentage value is lower than the other questions and this could be due to as many as 7 respondents (18%) are not interested in doing integrated bucket fish farming activities, while 19 respondents (48%) choose a neutral answer. This could be due to the aforementioned constraints, such as limited knowledge, time, area, and investment which experienced by the community.

The fourth statement is about integrated bucket fish farming's activities which are quite easy to implement. The results show that the average respondent's response is 3,675 from a maximum value of 5 or 74%. From these results it can be concluded that the people of South Tambun District agree that the integrated bucket fish farming activities are quite simple to implement. The integrated bucket fish farming activity has a very simple concept, which only requires one large bucket as a medium and does not require a large capital or budget.

The fifth question is that integrated bucket fish farming's activities can become a very profitable business. The average respondent's response is equal to 4,325 from a maximum value of 5 or 87%. From these results it can be concluded that the people of South Tambun District strongly agree that integrated bucket fish farming's activities can be a very profitable business. Fish and vegetables produced from integrated bucket fish farming activities can later be sold if the harvest is excessive.

In the sixth statement, which state that integrated bucket fish farming activities can be a solution for food provider in limited property area, it shows an average value of 4.45 from a maximum value of 5 or 89%. These results indicate that the people of South Tambun District strongly agree that integrated bucket fish farming activities

can be a food solution in limited area of land. Integrated bucket fish farming activities are suitable to be carried out in urban areas that do not have a large area to build fish ponds because this method is quite portable to perform.

The last statement is regarding the integrated bucket fish farming activity which is classified as one of the positive activities that can be carried out during the pandemic. The results show that the average respondent's response is 4.65 from a maximum value of 5 or 93%, which is the highest value of all statements. From these results, it can be concluded that the people of South Tambun District strongly agree that the integrated bucket fish farming activity is one of the positive activities that can be carried out during the pandemic. Integrated bucket fish farming can fill spare time, support food security, and improve the community's economy during the Covid-19 pandemic.

Based on the data from the questionnaire survey that has been distributed, the interest of the people of South Tambun District towards integrated bucket fish farming activities is quite high, however, it is still insignificant in its application. Several things that can be executed to increase public interest in carrying out integrated bucket fish farming activities are to provide stimulating information about integrated bucket fish farming such as making posters about integrated bucket fish farming which are then pasted on public facilities, holding various related webinars, holding direct counseling or producing and sharing videos about the procedures for implementing integrated bucket fish farming.

## 4. CONCLUSIONS

Integrated bucket fish farming is an activity that is very suitable to be carried out in the current pandemic conditions because the concept is very simple, does not require a large area of land, and does not require a large investment. In addition, integrated bucket fish farming activities can provide family food necessities such as animal protein and fresh vegetables sources. In addition this method can be viewed as a business opportunity to increase income through the sale of the produced products. Based on questionnaires distributed, the interest of the people of South Tambun District towards integrated bucket fish farming activities is quite high but in its application it is still insignificant. One of the main thing that can be accomplished to increase public interest in performing out integrated bucket fish farming activities are to provide information about integrated bucket fish farming in an appealing and informative form.

## 5. ACKNOWLEDGEMENT

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## 6. REFERENCES

[1]. Cahya, D. L. (2014). “Kajian Peran Pertanian Perkotaan Dalam Pembangunan Perkotaan Berkelanjutan ( Studi Kasus : Pertanian Tanaman Obat Keluarga di Kelurahan Slipi , Jakarta Barat )” *Forum Ilmiah,* Vol. 11(3), pp. 323–333.

[2]. Handayani, W., Nugroho, P., and Hapsari, D. O. (2018). “Kajian potensi pengembangan pertanian perkotaan di kota Semarang” *Riptek*, Vol. I(2), pp. 55–68.

[3]. Febri, S. P., Alham, F., and Afriani, A. (2019). “Pelatihan Budikdamber (Budidaya Ikan Dalam Ember) di Desa Tanah Terban Kecamatan Karang Baru Kabupaten Aceh Tamiang. *Prosiding Seminar Nasional Politeknik Negeri Lhokseumawe*, 3(1), 112–117.

[4]. BPS Kabupaten Bekasi (2020) “Kabupaten Bekasi dalam Angka 2020” BPS Kabupaten Bekasi. Bekasi. 257p.

[5]. Setijaningsih L and Umar C. (2015) “Effect of Water Retention on the Growth Rate of Nile Tilapia (*Oreochromis niloticus*) in The Aquaponic System Planted Water Spinach (*Ipomoea reptans*). *Berita Biologi* Vol. 14(3), pp. 267-275

[6]. Husein, H. (2016). Penggunaan Google Form sebagai alat penilaian kinerja Dosen di Prodi PGMI Uniska Muhammad Arsyad Al Banjari. *Jurnal Pendidikan Dasar Islam*, Vol. 8(1), pp. 40–50