



HYDROPONIC TRAINING WITH THE USE OF PLASTIC CUPS AS KALE VEGETABLE CULTIVATION WITH CATFISH CULTIVATION SYSTEM IN BUCKETS

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ABSTRACT

Hydroponic cultivation training activities conducted by students of KKN BMC 1 UNNES 2021 to the community aim to provide knowledge about the use of used plastic cups as a hydroponic medium for the cultivation of kale vegetables. Kale vegetables contain a lot of fibre that has many roles in the digestive process. One of the kale cultivation, kale planting can use used plastic glass media as one form of innovation that can be done to increase public knowledge about simpler vegetable planting as well as to improve people's skills amid the Covid-19 pandemic. Planting kale using used plastic glass media at the same time using a catfish cultivation system in a bucket. The direct benefit of this community service activity is in addition to knowledge, skills, and experience to the community with the use of used plastic cups as an alternative to planting media and buckets as an alternative media for catfish cultivation. This step also aims to increase income and productivity because when the time of harvesting vegetables is also at the same time harvesting catfish so that with this the community gets knowledge and fulfilment of balanced nutrition for families during the Covid-19 pandemic.

Kegiatan pelatihan budidaya hidroponik yang dilaksanakan oleh mahasiswa KKN BMC 1 UNNES 2021 kepada masyarakat bertujuan memberikan pengetahuan mengenai pemanfaatan gelas plastik bekas sebagai media hidroponik untuk budidaya sayuran kangkung. Sayuran kangkung mengandung banyak serat yang memiliki banyak peranan dalam proses pencernaan. Salah satu dari budidaya kangkung, penanaman kangkung dapat menggunakan media gelas plastik bekas sebagai salah satu bentuk inovasi yang dapat dilakukan untuk menambah pengetahuan masyarakat mengenai penanaman sayuran yang lebih simpel sekaligus untuk meningkatkan keterampilan masyarakat di tengah masa pandemi Covid-19. Penanaman kangkung menggunakan media gelas plastik bekas sekaligus menggunakan system budidaya ikan lele dalam ember. Manfaat langsung dari kegiatan pengabdian kepada masyarakat ini adalah sebagai tambahan pengetahuan, keterampilan, dan pengalaman kepada masyarakat dengan pemanfaatan gelas plastik bekas sebagai alternatif media tanam dan ember sebagai alternative media budidaya ikan lele. Langkah ini juga bertujuan untuk meningkatkan penghasilan serta produktivitas karena ketika waktu panen sayuran juga sekaligus panen ikan lele sehingga dengan ini masyarakat mendapatkan pengetahuan dan pemenuhan gizi seimbang untuk keluarga selama masa pandemi Covid-19.

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INTRODUCTION

Besito is a village located in Gebog Subdistrict, Kudus Regency, Central Java Province. Geographically Besito Village is located in the northern coastal area, is an area in the form of lowlands. Besito village is one of eleven villages in the Gebog subdistrict that has a distance of 07 km from the district city. This village is located between gondosari village in the north, the village of Jurang to the east, karangmalang village in the south and Padurenan village in the west. Administratively, Besito Village consists of 4 hamlets, 8 RW and 40 RT. The potential of the device consists of a Village Chief, one Village Secretary and four Village Heads. It has a population of 10,539 people consisting of 5,295 men and 5,243 women. (wikipedia.org accessed 2021).

People in Besito Village mostly livelihood as rice field farmers, as well as MSME activists. In general, the people of Besito Village use their land to grow rice, rice cultivation traditionally using soil media. This is done alternately with corn crops to avoid pest attacks on the plants that are being planted. Therefore, to increase the supply of vegetables, innovation is needed that is easy to give to the community.

Organic vegetables are one of the sources of nutrients needed by humans. There are some nutrients in vegetables that are not found in other food sources. Vegetables contain a lot of fibre that has many roles in the digestive process. Fibre can promote digestion and can prevent and reduce the risk of several diseases (Jahari and Sumarno, 2001). Especially during this pandemic outbreak, we need vegetables as food that has nutrients to keep our immune system. Cultivation of land kale can be done in narrow land by utilizing the use of planting media in used plastic cups. (Iskandar 2018) explained that the cultivation of kale in used plastic cups is more efficient and economically beneficial. Furthermore, the cultivation can also be tucked with the cultivation of catfish in the bucket. With a fairly simple way of working, by perforating the lid of the bucket the size of plastic glass and then putting it on the lid. Then the bucket is poured with water to the limit of the plastic glass. So that with planting media like this has the main function that increasing the power of innovation and creative members to the community so that it can produce greater profits. (Bilderback et al. 2005).

If an area has implemented lockdown or PPKM (Enactment of Restrictions on Community Activities) will most likely inhibit the distribution of food or vegetable supplies. Where we as humans should eat 3x a day to meet balanced nutritional needs and maintain health and maintain the immune system. In this pandemic period, we are required to always maintain personal hygiene and ensure the food we eat has balanced nutrition. Especially if buying groceries in a

market that is usually already held by sellers and other buyers. To anticipate unwanted things and ensure cleanliness in foodstuffs such as vegetables, it would be better if you cultivate your vegetables. Where the care and quality of cleanliness have been ensured safe because you are the one who cares for and grows it. And when harvesting there will be abundant ingredients from kale vegetables and catfish can be a stock of food reserves or can also be distributed to the surrounding residents so that when there is more can be distributed to neighbours, relatives, or underprivileged communities who may be affected by the covid 19 pandemic.

The purpose of this activity is to provide solutions and improve family food security in the covid-19 pandemic and increase knowledge to the people of Besito Village, Gebog District of Kudus Regency about the agricultural system with plastic glass media. used for kale vegetables and catfish cultivation in buckets. This activity is expected to be a means of exchanging information to improve skills that will have an impact on community independence during the covid-19 pandemic. In addition, it is also to fill in free time to produce something more productive and useful.

The problem experienced by the community in Besito Village is the lack of knowledge and skills in the cultivation of vegetables and catfish in one medium, namely by utilizing buckets. During this time the people of Besito village only use land media as a medium in cultivating plants, and also fish cultivation that must use the land as a pond. While agricultural land and also land for fish cultivation is now decreasing. Therefore, it is necessary to conduct plant cultivation training and fish cultivation by utilizing one medium, namely bucket. This training aims to provide education to the people of Besito Village, especially RT 01 RW 01 Gebog district of Kudus Regency, regarding the use of buckets as a medium for hydroponic planting and catfish cultivation. The hydroponic system used in this training is the Aquaponics system (polyculture of fish and vegetables). In the aquaponics system, the plant will be placed in a container placed in water storage and the water storage place will be used as a medium of fish cultivation.

METHOD

This training was held on August 11, 2021. The methods used in this training are Socialization, Q&A, and practice. The implementation methods used in this training begin with socialization or material provision. Socialization methods are used to explain to trainees what hydroponics is and the steps in its implementation. The next stage is the Q&A method; this stage is done to find out the response of the trainees. The next stage is the direct practice of cultivating vegetables and fish in buckets using an aquaponics system.

The first step in this training is preparation. Preparation includes the preparation of tools, materials, training places, and participants who will take part in the training.

The second stage after preparation is the implementation stage. Training is held in one meeting. At the beginning of the meeting, the material was about hydroponics and was explained the hydroponics of the aquaponics system. The next stage is the practice of aquaponics cultivation training of aquaponics systems. At this stage, participants practice directly by the material that has been described.

The third stage after implementation is the evaluation stage. The evaluation stage is the last in this cultivation activity. This stage is done by: a) assessing the ability of trainees in understanding the material provided, b) assessing the level of activeness of participants in training activities, c) assessing the suitability of the results of trainee practices with the material that has been given.

RESULTS AND DISCUSSIONS

Training activities were conducted to the community by students of KKN BMC 1 UNNES 2021 in the form of providing materials and practices, followed by residents around RT 01 RW 01 Besito Village, Gebog District, Kudus Regency. This activity was held on Wednesday, August 11, 2021, giving materials and practices regarding the hydroponic cultivation of kale and catfish in buckets.

Briefly the necessary tools and materials as well as the steps that need to be followed by the community during the practice of hydroponic cultivation of kale vegetables and catfish in buckets, as follows:

Tools and Materials:



Figure 1.

Tools and Materials Source: Personal Documents

Steps

1. First, make hydroponics first by preparing a plastic glass, make 4-6 holes at the bottom using solder carefully.
2. Next put cotton into a plastic glass (this cotton serves as a support for kale roots so as not to be directly exposed to water).
3. After that, put a small chunk of charcoal into a plastic glass (this aims to neutralize and also become the first focus of kale root).
4. Then, put 5-8 pieces of kale vegetable seeds into each glass of plastic.
5. After the hydroponics is finished, then the bucket that was prepared is filled with water.
6. Next, put the prepared catfish into the bucket.
7. After that, the lid of the bucket is hollowed out the size of a plastic glass with solder.
8. After the hole is finished, put the bucket lid back into a bucket that already has catfish.
9. And lastly, the hydroponic glass that has been prepared was put into every hole in the bucket lid.

During the training, the community showed a very responsive and active attitude following the activities, the community was attentive and earnestly paid attention to the material delivered. As the practice progresses, the community also has a high enthusiasm. This is shown if there are things that are not understood, the public will immediately ask.



Figure 2.

Implementation of Training. Source: Personal Documents



Based on observations, people who follow the training can practice the material quite well, after being given training, the community recognizes that the training adds to its knowledge and skills regarding budikdamber (cultivation in buckets). In addition, people who participated in the training understood the use of used plastic cups as a hydroponic medium.

Community training activities conducted by students of KKN BMC 1 UNNES 2021 have been successful in improving the knowledge and skills of the people of Besito Village, especially in the rt 01 RW 01 environment, regarding the cultivation of hydroponics of kale vegetables and catfish in buckets. This can be seen from the enthusiasm of the community in participating in training. The ability of the community

in understanding the material and its application includes good.

The results of the participants' practices in hydroponic cultivation of kale and catfish in buckets based on observations are good. The hope is that hydroponic cultivation training of kale and catfish in buckets can improve skills and cultivation results and increase the income of the surrounding community.

CONCLUSION

Aquaponics system hydroponic cultivation training model, namely the cultivation of kale and catfish vegetables with the use of buckets as an alternative to limited land in Besito Village, Gebog District, Kudus Regency has the goal, among others, to increase the knowledge and ability of the community in hydroponic cultivation of aquaponics system. Aquaponics cultivation of kale and catfish with the use of buckets as a medium. After participating in socialization and training, it is expected that the community can practice the cultivation of vegetables and fish hydroponically with the Aquaponics system. People are very enthusiastic about this activity. This is evidenced by their activeness in asking and practising the material that has been delivered. In addition, training like this must be continued so that the community can develop it and can enjoy the results of hydroponic cultivation of this system.

REFERENCES

- Saparinto, C., & Susiana, R. (2014). *Panduan lengkap budidaya ikan dan sayuran dengan sistem akuaponik*. Yogyakarta: Lily Publisher.
- Fathulloh, A. S., & Budiana, N. S. (2015). *Akuaponik Panen Sayur Bonus Ikan*. Penebar Swadaya Grup.
- Pertanian, T. (2014). *Tanaman Kangkung Pada Sistem Irigasi Hidroponik Nft (Nutrient Film Technique)*. vol, 1, 2-6.
- Nugroho, A. S., Dewi, E. R., Ulah, M., & Dwi, L. R. (2018). *PKM HIDROPONIK KELURAHAN KALICARI*.
- Roslani, R., & Sumarni, N. (2005). *Budidaya Tanaman Sayuran dengan sistem hidroponik*.