

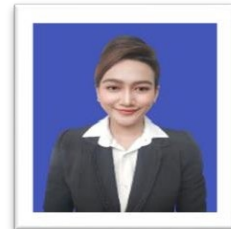
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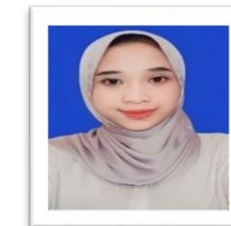
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INCREASING AGRICULTURAL PRODUCTIVITY IN KEDUNG JAYA VILLAGE, KEDAWUNG SUB- DISTRICT, CIREBON DISTRICT WITH HYDROPONIC TECHNOLOGY

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Abstract:

Background. Agriculture is vital for human survival. Therefore, we must continue agriculture and its development. There are several ways we can increase agricultural productivity, one of which is through hydroponics, a method of farming without soil and relying on nutrient solutions as a food source for plants..

Aims. Agriculture is a vital activity for human survival. Therefore, we need to continue agriculture and its development for human survival.

Methods. On Tuesday, February 18, 2025, during Real Work Lecture (KKN) activities in Kedung Jaya Village, Kedawung District, Cirebon Regency, a hydroponic farm was visited. The method used was a qualitative approach, intending to understand the impact of the hydroponic system's application.

Result. Moreover, in the current situation, the land used for agriculture is decreasing because of the increasing conversion of land, so it is necessary to use a method that takes up less land and is cheap. The emergence of this hydroponic method is to overcome this problem.

Conclusion. In this case, the Kedung Jaya Village Government in Kedawung District took the initiative to increase agricultural productivity with this hydroponic method.

Implementation. With support from the government and related parties, hydroponics has the potential to become one of the main strategies in achieving sustainable food security in Indonesia

Keywords: Agriculture, Hydroponics, production, technology, Kedungjaya

INTRODUCTION

Kuliah Kerja Nyata (KKN) is a form of student service to the community, where the knowledge gained in college is applied to solve social problems, including those related to agriculture and food security (UUN No. 12/2012). One of the programs in the KKN activities in Kedung Jaya Village is introducing and implementing a hydroponic farming system. This program aims to provide innovative solutions in agriculture that are more efficient, productive, and environmentally friendly (Rizal & Prasetyo, 2020).

Agriculture is vital for human survival; therefore, we must continue its development. There are several ways we can increase agricultural productivity, one of which is through

hydroponics, a method of farming without soil that relies on nutrient solutions as a food source for plants (Rakocy et al., 2016).

Especially with the current situation that the land used for agriculture is decreasing due to more and more land conversion, it must be required with a method that takes up little land and low costs, so the emergence of this hriophonic method is a soil-less agricultural method that can increase the efficiency of land and water use, making it suitable to be applied in community empowerment activities (Resh, 2013). So, in this case, the Kedung Jaya Village Government in Kedawang sub-district took the initiative to increase productivity in the agricultural sector with this hydroponic method.

The hydroponic system allows plants to grow with water media enriched with essential nutrients, making it more efficient on land and water and optimally controlled. With this method, it is hoped that the people of Kedung Kaya Village can increase agricultural yields for their consumption and as a new business opportunity.

METHODS

On Tuesday, February 18, 2025, Real Work Lecture (KKN) activities in Kedung Jaya Village, Kedawang District, Cirebon Regency, visited a hydroponic farm. The method used was a qualitative approach to obtain an in-depth understanding of the impact of the hydroponic system's application to increase productivity and agribusiness sustainability in the agricultural sector. This qualitative approach explored stakeholders' views, perceptions, and experiences in this technological innovation.

1. Schedule of Visits	2. RW coordination hamlet 1	3. Visit Site Survey	4. Implementation of Visit
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Data Source:

- 1) Field Observation: We asked permission from the village officials to visit a hydroponic farm and interview farmers. This activity aims to observe farming practices, crop conditions, and the infrastructure used in farming.
- 2) Interviews: In-depth interviews with farmers, agricultural experts, and related parties were conducted to obtain a direct and comprehensive view of the implementation of hydroponic systems, the challenges faced, and the benefits perceived by them.
- 3) Official Documentation: This aims to obtain richer context and secondary data that can support the research.



Data Collection Techniques:

1. Field Observation: Field observations will be made by recording various aspects of the hydroponic system implementation in a structured manner, so that the data collected can reflect actual conditions.
2. In-depth Interviews: In-depth interviews will be conducted following a structured interview guide. This aims to guide the conversation and ensure consistency in the data obtained.
3. Documentation of the Hydroponic Farm Visit.

RESULTS AND DISCUSSION

Definition of Hydroponics

Hydroponics is a method of growing plants without using soil as a growing medium. Instead, plants obtain nutrients from a water solution enriched with essential nutrients. This system allows plants to grow faster, healthier, and with higher yields than conventional farming methods. Hydroponics also saves water as the system is designed to, making it more environmentally friendly.

A visit to the hydroponics field in Kedungjaya village, Kedawung sub-district, Cirebon district, during the Community Service Program (KKN), showed various benefits for the local community. One example of a successful hydroponic implementation is Griya Hidroponik Cirebon, located at Jalan Sultan Ageng Tirtayasa, Kedungjaya, Kedawung District, Cirebon. Some of the key outcomes of hydroponics implementation in this region are:

1. Increased Vegetable Production

Using horizontal and vertical hydroponic systems in a greenhouse.

Plant about 10 types of vegetables such as pakcoy, kale, red spinach, green spinach, red lettuce, green lettuce, kailan, caisim, kale, and pagoda mustard greens.

Every week, sowing 3,000 seeds to maintain crop availability.

2. Land and Resource Efficiency

Hydroponics is applied as a solution to farming in small spaces. This system requires less water than conventional farming.

3. Increased Community Awareness

The education program and vegetable picking tour introduced hydroponics to the broader community. The community gained insight into modern agriculture, which is more efficient and environmentally friendly.

4. Economic Impact

Business opportunities for residents to engage in the production and sale of hydroponic vegetables. Urban agriculture-based business development to improve welfare.

Types of Hydroponic Methods

Some types of hydroponic systems used include:

1. NFT (Nutrient Film Technique) - Plant roots are in a thin stream of nutrient solution that is constantly circulating.
2. DWC (Deep Water Culture) - Plant roots are submerged in an oxygen-rich nutrient solution.
3. Ebb and Flow (Flood and Drain) - The nutrient solution periodically floods the plant roots and is then drained back.
4. Aeroponics - Plant roots are left suspended in the air and sprayed with nutrient solution at regular intervals.

CONCLUSIONS

1. The application of hydroponic technology in Kedungjaya Village, Cirebon, has been proven to increase agricultural productivity, especially in vegetable cultivation. With this system, farmers can produce faster, higher-quality, and sustainable harvests, despite limited land.
2. Hydroponics offers various advantages, such as water-use efficiency, better nutrient control, and less dependence on soil conditions. In , this innovation also opens up

economic opportunities through educational tours and farmer partnerships.

3. The success of hydroponics in Cirebon shows that this method can be an effective solution for modern agriculture, especially in areas with limited land and water resources. With support from the government and related parties, hydroponics has the potential to become one of the main strategies in achieving sustainable food security in Indonesia.

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