



UTILIZATION OF EMPTY LAND FOR FARMING USING THE HYDROPONIC PLANT METHOD

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ABSTRACT

Hydroponics is a technique of cultivating plants (Fruits, Vegetables, and Flowers) by utilizing water and not using soil as a plant medium. Types of hydroponic plants will produce types of plants that are free from pests and diseases. Growing plants with a hydroponic system is an environmentally friendly method because in its cultivation there is no need to use pesticides or even toxic herbicides. Vegetables grown with a hydroponic system are vegetables that will be fresher and free of pesticides. When compared to ordinary vegetables grown with soil media, the nutritional content of hydroponic vegetables will be better maintained and the taste is sweeter and crunchier. This hydroponic vegetable was developed by sowing the seeds in a planting medium called rockwool that was moistened with water, then after the seeds germinated in a week, the vegetables were transferred to a hydroponic pipe that was filled with water and nutrients. This business was carried out at Pondok Sarai Permata Housing, Lubuk Buaya, Padang. After harvesting, the vegetables will be taken from the netpot, cleaned and then marketed. The target customers of this business are meatball swordsmen, chicken noodle traders, hospitals, mini markets, hotels, and official offices in the Padang area. In addition, this business is also marketed in hospitals because hospitals need healthy foods such as hydroponic vegetables. To maximize so that customers can know our products. We will advertise on several existing social media, such as: Whatsapp, Facebook, and Instagram, and we will also promote it directly to our target customers. In addition, our Hydroponic business also cooperates with Hydroponic business partners in West Sumatra.

Keywords: Cultivation; Fresh; Hydroponics; organic; without pesticides

1. INTRODUCTION

Utilization of vacant land using the Hydroponic plant cultivation method (production/cultivation) [1-7]. The business will be run when it gets the first phase of funding from the proposal submitted to the PMW 2021 committee. The team that is involved in running this business consists of 5 people and is accompanied by 1 supervisor. The names of the participating teams: Rivandy Ahlal Fikri, Abdul Idham, Hafidhilmi Siddiq, Atiqah Muthiah, Atikah Sri Utami. The lecturer who will guide us in running this business is Mrs. Primawati, S.si, M.si. In this business we try to offer the public about the benefits of consuming vegetables produced from hydroponic plants. Currently we are still hit by the Covid-19 pandemic, which requires us to be able to maintain our health and stamina [8]. By consuming various foods that can help maintain the body's metabolic resistance, one of them is by consuming organic vegetables such as various types of organic vegetables grown using the hydroponic method [9]. The type of business that we will run is the cultivation of organic vegetables with the hydroponic method of plants [10-12]. The turnover for the hydroponic business is very promising for harvesting vegetables per day. Sales turnover ranges from Rp. 500,000 to Rp. 2 million / month in each shelf where these various plants contain every type of vegetable up to 620 netpots or cups (cups). And for all types of

vegetables we sell per netpot for IDR 2,000, then mustard pakcoy per netpot weighing 100 gr IDR 4,000.

The target customers of this business are meatball swordsmen, chicken noodle traders, hospitals, mini markets, hotels, and official offices in the Padang area. Of the several target customers, the potential customers will be hospitals located in the Padang area. Several hospitals will become potential customers of our business, because in some hospitals there are many patients who definitely need healthy food, one of which is our hydroponic vegetables. To maximize so that customers can know our products. We will advertise on several existing social media, such as: Whatsapp, Facebook, and Instagram, and we will also promote it directly to our target customers [13-14].

At this time there are still many customers who do not know how great the benefits of consuming hydroponic vegetables are, this is all due to a lack of knowledge of these hydroponic vegetables themselves. For this reason, we will offer and explain some of the benefits that will be obtained from consuming hydroponic vegetables compared to ordinary vegetables, in addition to the many benefits that will be obtained when consuming them. This hydroponic vegetable is also free from chemicals and pesticides, because everything we use in this farm is natural ingredients ranging from pest control and pre-harvest care [15-16].

2. LITERATURE REVIEW

Hydroponics is a technique of cultivating plants (Fruits, Vegetables, and Flowers) by utilizing water and not using soil as a plant medium. Types of hydroponic plants will produce types of plants that are free from pests and diseases. Growing plants with a hydroponic system is an environmentally friendly method. Because in its cultivation there is no need to use pesticides or even toxic hebicides. To support the results of hydroponic plants, it is necessary to support nutrients including sand. Coconut coir, crushed gravel, and rock, pumice, sawdust, and coarse nylon wire [17].



Figure.1. Picture of planting media that will be purchased

The products that I produce in this business are pakcoy vegetables, pagodas, kale, mustard greens, lettuce and others [18-22]. Why the vegetables? Because the needs of the vegetable market are very large, not only the upper middle class, various restaurants, and hotels are also my target market. Besides that, street vendors selling kebabs and burgers are also mushrooming, that's why I chose to grow various kinds of green vegetables [23-28]]. The advantages of pakcoy vegetables, lettuce, kale, and others. What is planted with a hydroponic system is that the vegetables will be fresher and free of pesticides. When compared to ordinary vegetables grown with soil media, the nutritional content of hydroponic vegetables will be better maintained and the taste is sweeter and crunchier [29-31].



Figure 2. Vegetable Pakcoy

3. EXPERIMENTAL

The strategy we use in marketing our products is to cooperate with several restaurants, such as: meatball sellers, chicken noodle sellers, and others. In addition to several existing restaurants, we will also try to offer the results of this product to several hospitals in Padang and we will also try to cooperate with hydroponic vegetable farmers in the UNAND area. If there are complaints from customers, then we will explain in detail remembering the advantages and disadvantages of our products, ranging from the benefits that can be obtained while consuming hydroponic vegetables to the price comparison of ordinary vegetables. Our main partner is a hydroponic vegetable farmer who is in the same UNAND area as running a similar business, our main partner is also one of the largest hydroponic vegetable farmers in the Padang area. The role of our business partners is as a container for our first agricultural products and as a place to consult about problems that may arise at any time in running this hydroponic business.



Figure.3. Picture of a green house/business location that will be rented

4. RESULTS AND DISCUSSION

The responsibility of each team personnel is to carry out their respective duties both from agriculture, marketing, packing the necessary files, and finances in running this business. The success target of each team is its success in carrying out the tasks and responsibilities that have been accepted, which is indicated by satisfactory harvests and marketing results. The equipment needed to support the smooth running of the hydroponic plant business is a water temperature measuring instrument and a pH measuring instrument which is very influential for measuring water temperature and nutrient levels given to plants. For the experience of using the equipment, almost all team personnel are able to use it. Role model, service of other, mentoring, social support (consumers, workers, investors, competitors, marketing)

Table 1 Number of receptors in each container

No	Name	Skill
1.	Rivandy Ahlhal Fikri	Managers and farmers
2.	Abdul Idham	Marketing and farmers
3.	Hafidhilmi Siddiq	Marketing and farmers
4.	Atiqah Muthiah	Secretary and marketing
5.	Atikah Sri Utami	Treasurer and marketing

The initial source of income from this business is a grant from PMW 2021. What is the average operating cost,

- Income

For sales income to consumers for 1 kg Rp.80,000. $\text{Rp.80,000} \times 560 \text{ kg} = \text{Rp.44,800.00}$
in one month

➤ Advantage

For profit per month $\text{Rp.44,800.00} - \text{Rp.2.560,000} = \text{Rp. 42,240,000}$ profit income

- The total operational costs are (direct business support equipment + Consumable costs)
 $= \text{Rp. 4,205,000} + \text{Rp. 2,560,000} = \text{Rp. 6,765,000}$

Table 2 Direct business support equipment

Needs	Amount	Price
Growing media	2 tables	IDR 3,000,000
Greenhouse rental	1	IDR 600,000
Measuring water temperature	1	IDR 150,000
pph ukur	1	IDR 150,000
aquarium pump machine	2	IDR 90,000
Bucket	2	IDR 70,000
Tray	3	IDR 45,000
Hose	10 meters	IDR 100,000
Amount		IDR 4,205,000

Table 3 Consumable costs

Needs	Amount	Price
Nutrition	3 kg	Rp. 300,000
Electricity and water	1 month	Rp. 200,000
Rockwool	5 slabs	Rp. 150,000
Planting pot	1000 pots	Rp. 1,000,000
Vegetable Seeds	400 gr	Rp. 200,000
Labor	5 people	Rp. 250,000
BBM		Rp. 200,000
Plastic	2 pekc	Rp. 30,000
Brand Stickers		Rp. 200,000
Flannel	5 m	Rp. 30,000
Amount		IDR 2,560,000

- For 1 kg of hydroponic vegetables for Rp. 80,000 with direct sales to consumers eat $\text{Rp.}80,000 \times 560 \text{ kg} = 44,800.00$ per month. So $\text{Rp.}44,800.00 - 2,560,000 = \text{Rp. } 42,240,000$.
- For 1 year profit $\text{Rp.}42,240,000 \times 12 = \text{Rp.}506.880,000$ /1th.
- Financial projection of your business for the next 2 years. $\text{Rp.}506.880.000 \times 24 \text{ months} = \text{Rp. } 12,165,120.00$.
- The funding requirement that we propose is Rp. 6,765,000

5. CONCLUSION

Growing plants with a hydroponic system is an environmentally friendly method. Because in its cultivation there is no need to use pesticides or even toxic hebicides. The turnover for the hydroponic business is very promising for harvesting vegetables per day. Sales turnover ranges from Rp. 500,000 to Rp. 2 million / month in each shelf where these various plants contain every type of vegetable up to 620 netpots or cups (cups). And for all types of vegetables we sell per netpot for IDR 2,000, then mustard pakcoy per netpot weighing 100 gr IDR 4,000.

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