

# Land Use Program for Hydroponic Cultivation of Women Farmer Groups (KWT) Anggraeni Clumprit Gerbosari Samigaluh Kulon Progo

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## Abstract

*Community service program in the form of hydroponic cultivation of land use programs by Women Farmer Groups Anggraeni in Clumprit, Gebosari, Samigaluh, Kulon Progo is expected to be an alternative for society who have limited land so that they can be used as a source of sufficient income. Hydroponics is a method of farming using planting media in the form of pumice, gravel, sand, coconut fiber, pieces of wood and foam. This has implemented as the function of the soil is to support plant roots and intermediate nutrient solutions can be replaced by flowing or adding nutrients, water and oxygen through these media. Counseling of this programs received good responses from the community. This is proven by the high level of community participation.*

**Keywords:** *hydroponic cultivation, land use, nutrient solution.*

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## Introduction

Clumprit is one of the villages in Gerbosari, Samigaluh, Kulon Progo, D.I.Yogyakarta. Clumprit has a strategic location as it is close to the village hall and other public facilities. Almost every house has a yard to plant various kind of vegetables. The Clumprit's women were gathered in the Women Farmer Group (KWT) Anggraeni. Women Farmer Group Anggraeni Group has 30 members and a plant house.

Hydroponic farming has been done by many people to use land that is not large. There are many advantages and benefits from the system, such as to improve the quality and quantity of agricultural products, maximizing agricultural land, and not requiring large land.

### **Hydroponic: plant cultivation without soil**

In harfiah *Hydroponic* means *Hydro* = water, and *phonic* = processing. In general means a system of crop cultivation without soil, but use water containing nutrient solution. Hydroponic cultivation usually is done in the greenhouse for optimal growth and protection from outside influences such as rain, pests, disease, climate, etc.

The superiority of plant cultivation with the hydroponic system is: plant density per unit area can be multiplied so that saves land use. Product quality

such as shape, size, color, cleanliness can be improved because of the nutrient requirements of plants given in a controlled manner and does not depend on the season, planting time and harvest, so that it can be arranged according to market needs.

Hydroponic system models include DWC (Deep Water Culture), Wick System, NFT (Nutrient Film Technique), DFT (Deep Film Technique), Aeroponics. DWC (Deep Water Culture) is the simplest model, by floating the roots in nutrient water in a place that has been designed according to the needs of the plant. While the Wick System, the principle only requires an axis that connects nutrients and planting media. Water and nutrient will get to the roots of plants by utilizing axes made with the principle of the capillary.

The superiority of DWC and Wick System is planted get a continuous supply of water and nutrients, low cost, easy to obtain equipment, and no regulatory system using pumps that require electricity. While lacking the wick system is water and nutrient cannot return so that more wasteful of water, the large volume of water used, it is difficult to regulate the water requirements needed by plants.

## Method

This activity began a meeting with representatives of the Women Farmers Group (KWT) Anggraeni in

Clumprit to explain the planned service activities. Then conducted a survey of the location of agricultural land and visited the Agriculture and Food Center (BPP) in Samigaluh sub-district which is a government institution that houses the agricultural sector. We made a request from the resource person and discussed the hydroponic model that was suitable for the residents.



**Figure 1.** Manufacture of hydroponic plant media rakit apung models.

Then carried out outreach activities on hydroponic cultivation on August 14<sup>th</sup>, 2018 starting at 10.00-13.00 WIB, which was held at the meeting hall of the Clumprit compound by Suryono S.T.P from Samigaluh BPP. This counseling activity was attended by all 30 members of the farmer women group (KWT) Anggraeni. Hydroponics socialized for KWT Anggraeni namely floating raft and wick models. Starting with a simple floating raft model, the equipment that needs to be prepared is as follows: a plastic tub that is useful for storing water that has been mixed with nutrient solution, Rockwool as a planting medium, glass of mineral water as a net pot (plant growth place), styrofoam, cutter and nails to punch holes in mineral water.



**Figure 2.** Mixing nutrient solutions for hydroponic plants.

First, the plastic tub is cut as needed, then makes a hole in the styrofoam surface, the distance between the holes is rather tight. This hole is to place a glass of mineral water. The bottom of the glass of mineral water is perforated. Next set the net pot into the styrofoam hole. Rotate and arrange the base on the net pot, until it touches the surface of the nutrient solution. After that, place the seeds at the bottom of the net pot.

The stages of plant care are First, place the plastic tub in a place that is exposed to the sun. Second, keep nutritional fluids in place. Third, make sure the roots remain attached to the nutrient solution.

## Results and Discussion

The extension program was held on August 14<sup>th</sup>, 2018. The program succeeded in practicing the hydroponic system of floating raft and wick models and succeeded in making nutrient solutions suitable for hydroponic plants.



**Figure 3.** KWT Anggraeni after counseling activities.

The response from the Women Farmers Group (KWT) Anggraeni and Clumprit hamlet residents who participated in hydroponic plant counseling was very good because the way to plant was easy and the tools used were not expensive. In addition, people can use the used goods. There is one in the house owned by Women Farmers Group (KWT) Anggraeni. Some members of KWT Anggraeni are also interested in planting with a hydroponic system in the home yard.

## Conclusion

Women Farmers Group (KWT) Anggraeni were able to plant with hydroponic systems, floating raft models and wick models. Plants with hydroponic systems are cleaner and fresher than plants with soil media and polybags. Hydroponic plants are planted in greenhouses even with limited space.

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