



# Comparison of Growth of Hydroponic Plants and Soil



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## Introduction

The aim of this project is to produce liquid fertilizer for hydroponic system and solid organic fertilizer from Fish Waste using Traditional Fermentation Technology.

“HYDROPONICS” is the growing of plants in a liquid nutrient solution with or without the use of artificial media. Regularly used mediums include expanded clay, coir, perlite, vermiculite, brick shards, polystyrene packing peanuts and wood fibre.

Hydroponics has been recognized as a viable method of producing vegetables (tomatoes, lettuce, cucumbers and peppers) as well as ornamental crops such as herbs, roses, freesia and foliage plants.

In this project Nutrient Film Technique (NFT) hydroponic system was used where, plants are placed in a polyethylene tube that has slits cut in the plastic for the roots to be inserted. Nutrient solution is pumped through this tube and will circulate to reach each plant in the system

## Method

Materials used were fish wastes, nitric acid, sulfuric acid and poethylene tube, tea plastic cup and woods.

10 Kg of Fish Samples waste and fermented by traditional fermentation technology for 7 days. Furthermore, this product is called Liquid Organic Fertilizer (FLF). To determine the level of nutrients was taken 100 grams of FLF sample mixed with 20 mL of concentrated HNO<sub>3</sub> heated for 10 minutes at 600C, filtered and ready to be analyzed. To make Solid Organic Fertilizer (SOF) was mixed between sample of LFL with clay and then air dried. Nutrient Analysis. Nitrogen Analysis: Then for nitrogen analysis taken 3 gr + 10 mL H<sub>2</sub>SO<sub>4</sub> + 1/2 Keldhal tablets. After few days the FLF is ready to use and inserted and stored in bottle in bottle. Then the garden and hydroponic is prepared for growth of vegetables.

## Results

The Nutrient Film Technique (NFT) hydroponic system is prepared using polyethene pipes ready to be used for hydroponic grown plants.

In our project we had realized that growing of vegetable in NFT, Nutrients film Tube as hydroponic system with regular recycling of nutrient solutions improved growth, productivity and mineral composition whereas the solid organic fertilizer (SOF) the growth is minimal and take longer time to harvest.

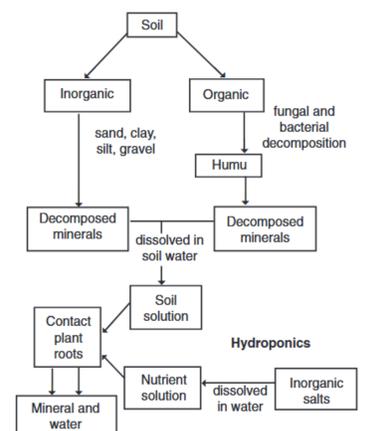
The system is slightly slanted so that nutrient solution runs through roots and down back into a reservoir. Plants are placed in channel or tube with roots dangling in a hydroponic solution. Although, roots are susceptible to fungal infection because they are constantly immersed in water or nutrient. In this system, many leafy green can easily be grown and commercially most widely used for spinach.

## Conclusion

A large number of plants and crops or vegetables can grow by hydroponics system. Quality of produce, taste and nutritive value of end products is generally higher than the natural soil based cultivation. In recent years hydroponics is seen as a promising strategy for growing different crops. As it is possible to grow short duration crop like vegetables round the year in very limited spaces with low labour, so hydroponics can play a great contribution in areas with limitation of soil and water and for the poorer and landless people. In Zanzibar, the hydroponic industry is expected to grow exponentially in near future. To encourage commercial hydroponic farm, it is important to develop low cost hydroponic technologies that reduce dependence on human labour and lower overall startup and operational costs.

## References

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## Acknowledgments

We are thankful to our supervisor Khalfan Abeid for encouraging us to do this work. We are also greatly obliged to Mr. Khamis Mbegu who not only guided us in mastering this work but also for his tremendous support that he gave us all the time when we are doing experimental works for our project in this year 2022.