

# Is Hydroponics Organic?

Spencer Minja and Masalu Ernest

Kibiti Boys High School



## Introduction

The project “Is Hydroponic Organic” aims on analysing nutrient content of both methods ( Hydroponics and Soil farming ) to see its effect on human health so as to choose the best farming method which is safe and more efficient.

In Tanzania Hydroponics have been introduced in various regions including Bukoba rural and Bunda Districts to grow fodder for animals but also private sectors such as Dar fresh product in Kigamboni for milk farming. Through different research, surveys and experiments which were conducted during the project we have managed to approach the answer to the hypothesis and come up with a better solution and recommendation; this will help to bring up positive effects to various sectors such as Economic, Health and industrial sector.



## Method

In order to approach to an answer to “Is Hydroponic organic” different experiments were done to reach the necessary data for conclusion.

A construction of Hydroponic system of 2 1/2 meters length and 1 meter width and a well prepared soil bed of 5 meter was made to which same crops, Tomatoes of species Tengeru 97 which were grown for a time of 17 weeks till harvest for soil farming while for Hydroponic system it took 16 weeks and 1 day.

Materials used in hydroponic system included;

A plastic hydroponic rank

Substrates ( supporting materials)

-Coconut fiber

-Rice husks

-Gravel

-Water



The images above are for hydroponic system and hydroponic tomato plant



The images above show the seedbed of tomato in soil farming

## Results

The experiment was designed to test the hypothesis that water consumption for hydroponics was excess compared to that of soil farming. It was carried out by measuring the water used in hydroponic system and soil farm before irrigation.

AIM:

The aim of the experiment is to determine the water consumption of both farming methods.

Experiment 2.

The experiment was designed to measure the area needed for growth of 1kg of tomatoes by using both systems, for soil farming and hydroponics.

AIM:

To determine the area used to grow 1kg of tomatoes.

Experiment 3.

The experiment was designed to determine the average weight of the products from both farming methods.

AIM:

To determine the average weight of the product so as to check which method had a better produce.

The results from each of the experiment, from experiment 1 to 5 were collected for conclusions, advices and recommendations concerning the two farming methods used Hydroponics and soil farming.

## Conclusion

Through the researches, literature reviews, surveys and experiments done throughout the project, it has been shown that yes Hydroponics is organic and this is basically proved by experiment 4 which analysed the nutrient content of tomatoes from both farming methods (Hydroponics and Soil farming ).

Our project is highly supported by most researches across the world including the research done by Economic and Social Research Foundation (ESRF) in collaboration with the Government of Tanzania and United Nations Environment Programme (UNEP) in March 2016, it revealed other advantages of hydroponics which are:

The system grows six times more per square foot than soil farming

Hydroponics uses 90% less water than soil farming

With hydroponics, we can grow at any time of the year, in any weather and anywhere.

Fewer pests to deal with since it is in green house and no weeding needed

Reduced time and amount of labourer.

## References

1. Gericke, William F. (1937). “Hydroponics- \_ crop production in liquid culture media”.

Science. 85 (2198): 177-178.

2. dos Santos, J.D. : et al. (2013). “Development of a vinasse nutritive solution for hydroponics”. Journal of Environmental Management. 114: 8-12.

3. Gericke, William F. (1945). “The meaning of hydroponics” Science. 101 (2615): 142-143.

4. Douglas J.S (1975). Hydroponics (5th ed).

5. Biological science Third Edition, D.J Taylor , N.P.O Green and G.W. Stout.

## Acknowledgments

The project “Is Hydroponic organic” has a major effort from many potential people. We would like to thank the following for the support and assistance. The Kibiti Boys High school administration for their great support.

Our school headmaster Mr. Dismas Njawa.

Our project teacher Mr. Allan Rutale.

Our fellow students of Kibiti Boys High School for their participation and assistance.

Our laboratory technician Mrs. Kadoda and Biology laboratory teacher Mr. Allan Rutale and Mr.Magesa.

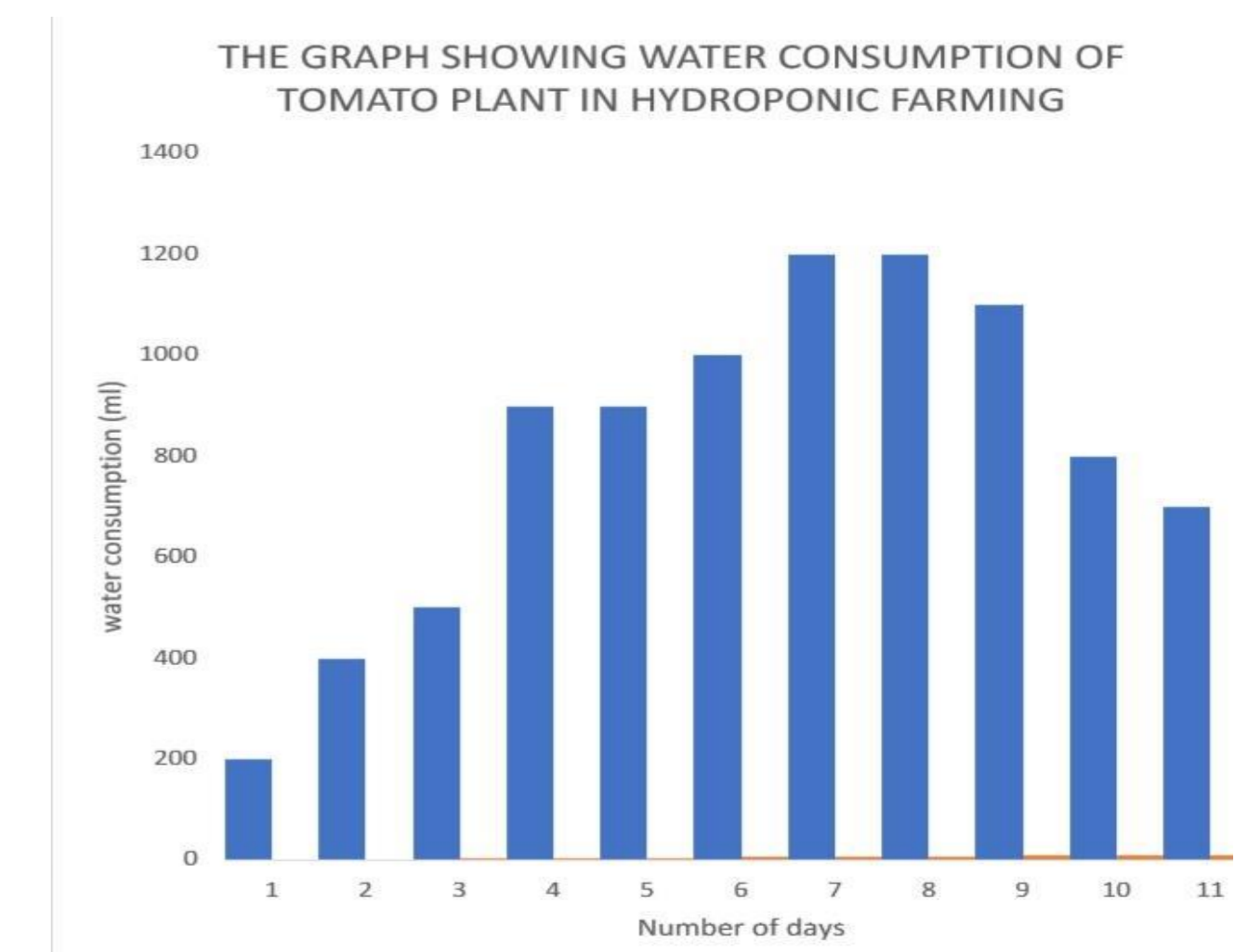


TABLE SHOWING WEIGHT OF TOMATOES FROM HYDROPONICS.

Number of Tomato	Weight in grams
1	273.49
2	301.20
3	311.28
4	298.75
5	210.54

TABLE SHOWING WEIGHT OF TOMATOES FROM SOIL FARMING.

Number of Tomato	Weight in grams
1	201.23
2	197.65
3	176.98
4	195.70
5	200.30