Design of a Wick Garden for Vegetable Growing in Mtwara

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Introduction

Wick garden for vegetable growing in mtwara this is a local alternative way of growing vegetable in those area with water shortage, and for those area where soil tend to lose water to large extent.this was introduced to help women leaving near the school compound mangamba juu to involve in vegetable selling at our school where there is great demand of vegetable due to increase of number of students. This idea came after we observed that many women that came at our school to sell or supply vegetable are from mangamba chini.women of mangamba juu do not involves in those activity because they experience shortage of water in their area and soil is not good for agriculture the soil has been eroded due to running water they experience hard ship in life and failed to recognize the opportunity for them to engage in agriculture in their home land. Wick garden involve planting vegetable in plastic bottle where water is kept in a bottle and wick sent the water to the soil which is above water

Method

i.Plastic bottle,ii. Old clothes,iii. Water,iv. Soil,v. Manure, vi. Knife, scissor, seeds

CONSTRUCTION OF GARDEN

Cut the plastic bottles then take a piece of cloth soak to the top part of bottle then turn up side down then put some soil at the top cut and then pour some water at the remaining part of bottle after that add some water to the soil and plant the seeds

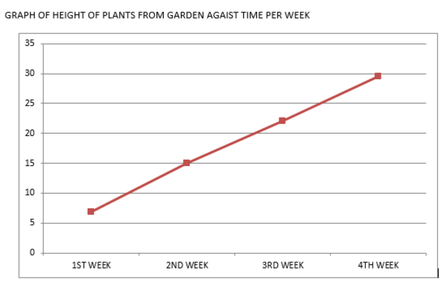
The top part of bottle help to hold soil at a place and the soil will help to encore and support the plant also to supply some basic nutrients of the plant the wick or piece of cloth this help to raise water from the bottom to the soil above to nourish the plant via roots

The bottom container store water to be used for the plants for the whole period of time

In the setup bottle there are operation of natural forces these includes Osmosis, Capillary force, Adhesive and Cohesive force, and Diffusion. These forces together make water to move through the wick or piece of cloth from the container to the soil above and wet the soil . in the soil water fill up pore spaces of the soil where capillarity occur and make water to move to the plant root .the plant root hair create osmotic gradient and water enter the plant root by osmosis and move to the xylem tissue to the leaves for photosynthesis. From the bottom container adhesive and cohesive force raise the water to the wick as oil or kerosene raise wick to a lamp to burn the light .The combined generated force is greater than the gravitation force that's why water raise the wick and create the continuous column to the soil to feed the plants. Diffusion help to carry mineral dissolved in water to the plant as water move to the soil

Results

The garden of (mchicha) was introduced and seed were sawn in the soil in each bottle then observation and data were collected for one month(period of four week)



From the graph above the Red line curve show that the growth parameter of plant (HEIGHT) preceded exponentially from the first week to fourth week this signify that the supply of water to the plant were satisfactory. Plant got water and mineral as it was required for growth and development.

LIMITATIONS TO THE PROJECT

The out break of corona disease has interfere with the whole process of data collection and project development we failed to go further in research on many other field crops also to meet with agriculture expertise for assistance and advice

RESULTS OF EXPERMENTS

FIRST WEEK

GARDEN

PLANTS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
HEIGHT(CM)	6.5	7	6.7	7	7	6.3	7	7	7.2	7	7.2	6.6	6.8	6.9	7

Mean height =103.2/15 =6.8cm

SECOND WEEK

GARDEN

PLANTS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
HEIGHT(CM)	15	15.5	16	14.5	15	15	15	15.2	15	14.8	14.5	14.6	15	15.4	15.7

Mean height =226.2/15 =15cm

THIRD WEEK

GARDEN

PLANTS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
HEIGHT(CM)	22	23	20	23	22	22.5	22.6	22	22	22	21	22.3	22.6	23	22.2

Mean height =332.2/15 =22.1cm

Conclusion

Wick garden for vegetable growing is better to be recommended for all people not only those women of mangamba high but to all Tanzanian men and women .And due to situation we are having now of CORONA DISEASE is better to practice at our home his can help us to get supplied with vegetable while we are at home as doctors and our political leaders want people to stay at their home and to avoid unnecessary movement

References

(I) Physics For Secondary School Book One
(Ii) Biological Science For Advanced Level
(Iii) Soil Science For Secondary School

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