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EFFECT OF SILICEA TERRA 6C ON THE GROWTH OF GLYCINE MAX IN CLOSED HYDROPONIC SYSTEM

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ABSTRACT

Background: a study based on growing plants in hydroponic system. Hydroponics is a method of growing plants without using soil (i.e., soil less) and this method is also helpful which requires only little amount of water. Chemical agriculture dominates traditional organic forming due to assessed yield and reduced infection. But over a period of time, we started experiencing damaging effects of chemical applications. Homeopathic remedies stimulate immune system to fight disorders. **Objective**: this study to bring out the effectiveness of homeopathy treatment in increasing plant tolerance to stressors in the environment, and also bring out the positive effect of plant growth in normal fresh water & saline water, increasing immune system response thereby enhancing productivity of glycine max, so that we can obtain purest form of edible soya beans. This method has been done to develop a natural, simple and inexpensive method to increase agriculture production. **Materials & Methods**: a study was done at my home and 60 plants are taken for the study each is kept in 12 separate set of hydroponics with positive and negative control (both fresh water & saline water). This is an experimental study on glycine max plants. Homeopathic medicine of silicea terra 6c is given in 12 sets of hydroponic system. **Result**: the plants are very healthy while treating under fresh water with silicea 6c weekly wise when compared to others. Growth parameters such as length of the shoot, number of leaves, number of pods, number of buds, and number of flowers are also increased under this administration. Then second comes under the saline water with silicea 6c daily wise. **Conclusion**: homeopathic medicine having action on the plant growth parameter. From it became clear that silicea 6c increases plant tolerance to saline stressors in the environment,

thereby enhancing plant productivity and increasing the nutritive value. This can be understood by the histological studies which showed the internal essence of the plant using homeopathic drugs in agriculture is simple inexpensive and effective.

KEYWORDS: hydroponics, fresh water, saline water, silicea 6c, glycine max.

INTRODUCTION

According to present situation of agriculture in india there is increased demand of all basic resources especially water, land etc. And use of chemical fertilizers among them which is being injurious to health so that the method of hydroponics is helpful which requires only little amount of water and little space even the terrace and balcony of houses. indian soil has been used for growing crops for 1000 years without caring much for replenishing this had led to depletion and exhaustion of soils resulting in low productivity. this is the serious problem can be resolved by using hydroponic system and by adding silicea, this major problem is rectified by attaining high crop yield and sustained growth. Important benefits of agro homoeopathy include economic savings and preservation of the natural ecology, agro homoeopathy is not a recent advance, it is the biodynamic agriculture found by pioneers mr. Rudolf steiner and mr. Lilikolisko who called it as “agriculture the future.[1],,

Hydroponics

Hydroponics is a method of growing plants without using soil (i.e., soil less). In the hydroponics method, plants are raised in an inert and perfectly ph balanced growing medium where the plants only need to expend minimal energy to acquire nutrients from the roots. Grown plants dip their roots directly into nutrient rich solutions; they get what they need much more easily than plants growing in soil.

Hydroponic methods are particularly useful in regions where the soil or climate is not suitable for crop cultivation. As the population increases and arable land declines, hydroponics could

replace traditional agriculture. There has already been a great deal of talk in the scientific community for the potential use of hydroponics in third world areas and this technique will be important in providing fresh food in space programs for long term Colonization of mars or the moon.[2]

Water salinity

Salinity problems reduce productivity in both irrigated and non-irrigated agricultural land throughout the world. Irrigating crops with saline water can result in yield loss and decreased quality. The plant loss moisture and suffer stress.[3] Rainfall over the past decade has been lower than the long-term average for most of the region. The availability of freshwater is a major limiting factor in sustainable agriculture. When it comes to extreme environments such as arid and semiarid areas pressure must be put in major adjustments in alternative agriculture.[4]

Silicea

Silicon is recently becoming recognized as a beneficial plant nutrient and it is added to plant as a fertilizer. According to science researches, silicon increase plant's resistance to many plant diseases.[5] It helps leaves become larger and thicker, thus limiting the loss of water through transpiration and reduces water consumption[6] and increasing the immune system thus it prevents frequent and recurrent illness in plants, increased tolerance to drought and heavy metals, as well as increasing both crop quality and yield. Silicea is often deposited on the surface or in the interior of their stems[7] si is considered for plant growth, especially under stress conditions. Indeed, si alleviates the toxic effects caused by abiotic stresses, e.g., salt stress.[8] **Preparation**: silicea is prepared by fusing silicea and carbonate of sodium, dissolving, residue filtered and precipitated by hydrochloric acid. Trituration 1x- saccharum lactis-900gms, silicea coarse powder-100gms, to make 1kg of trituration. Potencies- 2x and higher to be triturated.6x, 6c may be converted to liquid 8x,8c.

AIMS AND OBJECTIVES

- To study the effect of homoeopathic remedy silicea 6c act as a nutrient.
- To improve the growth and yield of soya beans plant in a closed hydroponic system.
- To bring out the positive effect of plant growth in normal saline water.
- To evaluate the growth rate, quantity and quality of soya beans.
- To assess the biological parameters.

METHODOLOGY

Total 60 germinated seeds are selected and it is kept in 12 separate nft set of hydroponics with positive and negative control. (each 1 set has 5 germinated seeds).

Inclusion criteria

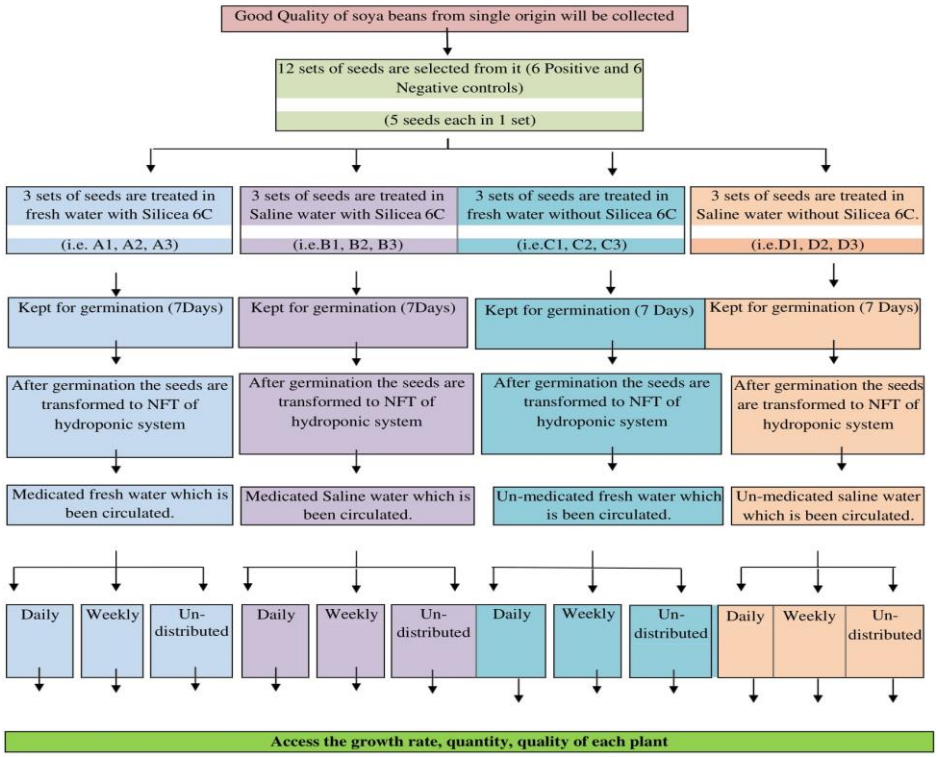
1. good quality of soya bean seed
2. fresh water
3. saline water

Exclusion Criteria

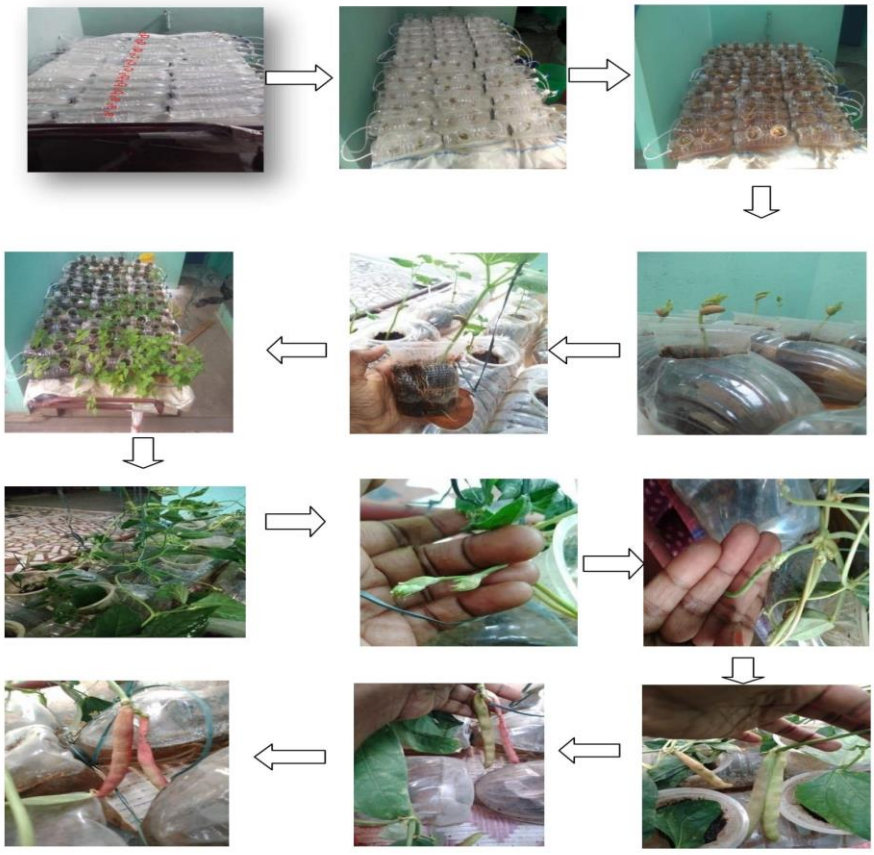
1. bad quality of soya bean seed
2. soil

Method of administration

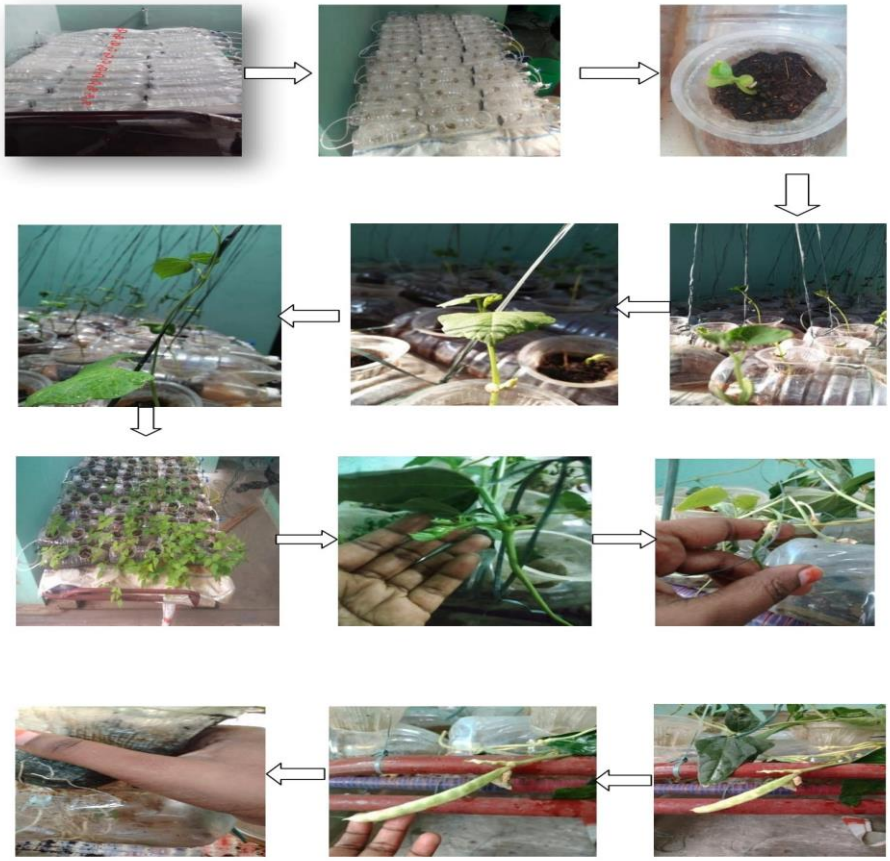
1. A1, a2, a3 the plants are treated in fresh water with silicea 6c. In these three sets a1 which has been circulated daily, a2 which is been circulated weekly, a3 which has been circulated undisturbed.
2. B1, b2, b3 the plants are treated in saline water with silicea 6c. In these three sets b1 which has been circulated daily, b2 which is been circulated weekly, b3 which has been circulated undisturbed.
3. C1, c2, c3 the plants are treated in fresh water without silicea 6c. In these three sets c1 which has been circulated daily, c2 which is been circulated weekly, c3 which has been circulated undisturbed.
4. D1, d2, d3 the plants are treated in saline water without silicea 6c. In these three sets d1 which has been circulated daily, d2 which is been circulated weekly, d3 which has been circulated undisturbed.



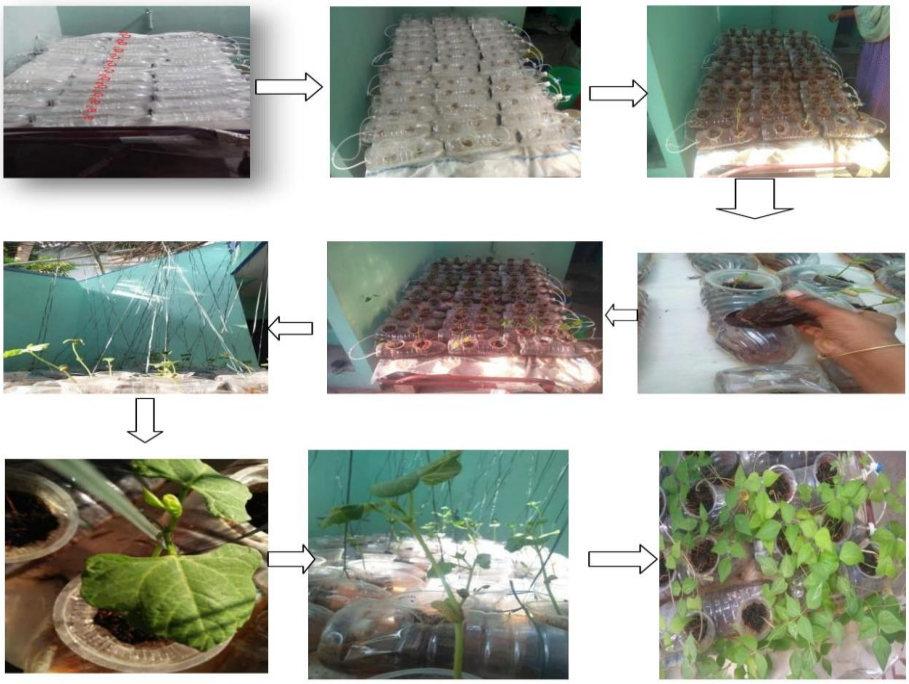
POSITIVE CONTROL:
FRESH WATER WITH SILICEA 6C (i.e) A1,A2,A3



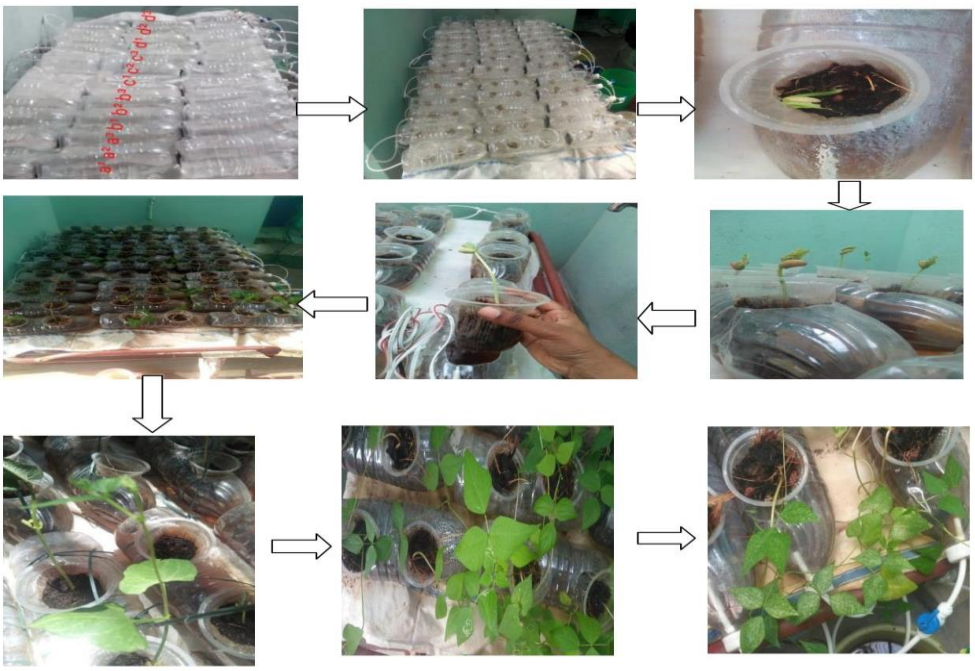
SALINE WATER WITH SILICEA 6C (i.e) B1,B2,B3



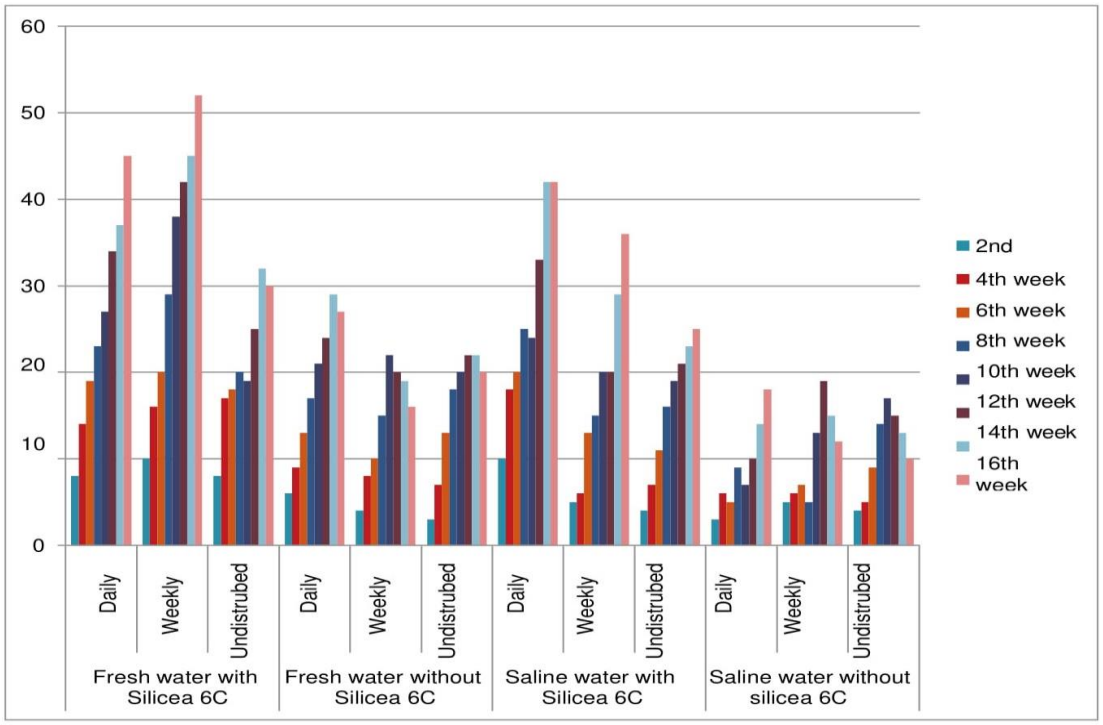
FRESH WATER WITHOUT SILICEA 6C (i.e.) C1, C2, C3



SALINE WATER WITHOUT SILICEA (i.e.)D_1, D_2, D_3



OBSERVATION AND RESULT



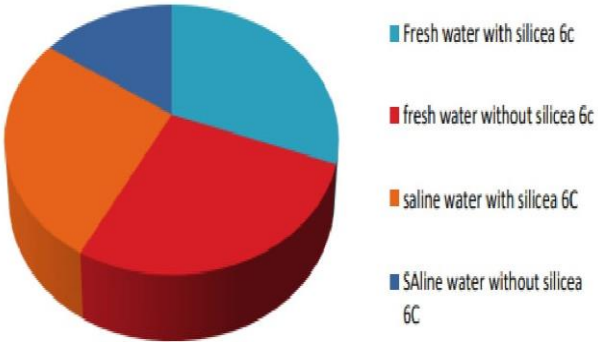
From this observation the plants are very healthy while treating under fresh water with silicea 6c weekly wise when compared to others.

Growth parameters such as length of the shoot, number of leaves, number of pods, number of buds, and number of flowers are also increased under this administration.

Then second comes under the saline water with silicea 6c daily wise.

Biochemical parameters

(comparison of carbohydrates, protein content, chlorophyll content)



DISCUSSION

- The experimental study was conducted using Silicea 6C in *Glycine max* plant. For the study purpose, the method of Hydroponics is used. In present situation Fresh water is not easily available. Hence, I included Saline water along with Fresh water. The main benefits of organic seed treatments include increased phosphate levels, nitrogen fixation and root development. Similarly, does soaking in Silicea 6C improved the germination rate as understood through our results, wherein un soaked germination rate was much slower and lesser. It is proving that treating soaking helps some of the metabolic process necessary for germination to occur and make seeds get ready for germination.[9]
- Normally due to salinity the germination process decreases. Yet it was evident that seeds are soaked in Saline water with Silicea 6C germinated earlier compare to seeds are soaked in Saline water without Silicea 6C.
- The data i.e., various parameters of growth were calculated between Consecutive stages of plant development and summarized to show the effectiveness of various treatments in various stages. In our study the plant was administered under Silicea 6C daily wise, weekly wise, and undisturbed wise in both fresh water and saline water with & without Homeopathy medicine.
- The plants are very healthy while treating under **Fresh water with Silicea 6C weekly wise** when compared to others. Growth parameters such as length of the shoot, number of

leaves, number of pods, number of buds, and number of flowers are also increased under this administration. Then second comes under the **Saline water with Silicea 6C daily wise** treatment. The set of Saline water without Silicea 6C failed to produce any yield characters.

- From the study the stem thickness of the plants grown with homoeopathic medicine is greater when compared with all the other sets. The stem thickness of plants of set Fresh water with Silicea 6C is higher than those of all the other sets. The increase in stem thickness is a result of secondary growth in plants it is due to the activity of lateral meristem.[10]
- An important finding in treating the plants without Silicea 6C was that the attack of a fungal diseases i.e., white spots. The plants treated with Silicea 6C are healthy compare to others.
- Chlorophyll concentration data will provide information on plant's photosynthetic potential. From this study the chlorophyll concentration of plants applied with Silicea 6C in fresh water is found to be increased when compared with control. The chlorophyll content of the plants denotes the high energy electrons to a series of molecular intermediates. Chlorophyll is vital for photosynthesis, which allows plants to absorb energy from light. The function of the reactions centre of chlorophyll is absorb light energy and transfer it to other parts of the photosystem.[11]
- Increasing the level of protein and carbohydrates play an important role in plant immunity.[12] The carbohydrate and protein content in the plants are more in Fresh water with Silicea 6C treatment. The protein content in the set of Saline water plants without Silicea 6C decrease due to increase in the Salinity. But increases under the treatment with Silicea 6C it was found to be increased. The changes in the protein level also create an impact on the plant cell.
- The pH factor of the water reflects its acidity level which is important for the plant growth. The acidity of the water causes block in dispersal of nutrients. Thus, the decrease in water pH enhances the crop productivity and nutritive value.
- The consumption of fruit and vegetables has been associated with lower risk of chronic human health problems like cardiovascular system due to their high contents in dietary bioactive compounds.[13] regular consumption of soya bean may alleviate the symptoms of menopause, osteoporosis and reduce prostate & breast cancer. Soya bean isoflavones

increase insulin secretion without any change in the glucose disposal and also reduce obesity.[14]

- As NASA'S astronauts prepare to fulfil the Vision for Space Exploration with increasingly lengthy missions, trying to find a way for them to grow their own food. Inside closed plant growth chambers at KSC, radishes, lettuce and green onions grown HYDROPONICALLY in nutrient enriched.
- Hydroponics is the method in which the plant is grown only with the help of water without using sand, so by adding Silicea 6C the plant will also get the benefits of sand as it has the composition SiO2 which enhances growth and yield of all annual and vegetable crops promotes upright growth (stronger & thickness, shorter internodes) prevents lodging promotes favourable exposure of leaves to light, provides resistance to bacterial and fungal diseases.

CONCLUSION

From forgoing study, it became clear that silicea 6c increases plant tolerance to saline stressors in the environment, thereby enhancing plant productivity and increasing the nutritive value. This can be understood by the histological studies which showed the internal essence of the plant using homeopathic drugs in agriculture is simple inexpensive and effective.

It can be concluded from this study that it is possible to increase the cultivatable plants, yield as well as improve quality in agricultural crops through homoeopathy drugs.

Agro homoeopathy paves the way for a safer and chemical free way to do farming. Utilizing homoeopathic dynamizations on plants guarantees non toxicity because the mode of preparation assures that plants will no way be contaminated. It will neither damage the organism, the soil, nor the plants it also has an enormous potential as it covers the majority of crops and enables crop abundance and better nutritive yield.

SUMMARY

- The germination rate of the seeds with silicea 6c showed early germination on the 2nd day and seeds without silicea 6c showed slow rate of germination.
- The length of the shoot was increased in the set of fresh water treating with weekly wise silicea 6c in comparison with the other sets. Plants under without silicea 6c was showed stunted growth.

- The number of leaves was also increased in fresh water under silicea 6c weekly wise and daily wise then comes under saline water without silicea 6c daily wise.
- The number of buds, pods flowers was more in plants under fresh water with silicea 6c weekly wise then comes under saline water with silicea6c daily wise and it was evident that there were no buds, flowers, pods in the sets of saline water without silicea 6c.
- Biochemical components of seeds such as carbohydrate and protein were studied and were found more in plants with fresh water with silicea 6c.
- Chlorophyll content was more in plants under fresh water with silicea 6c treatment

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