

In Agra Region, Compost Plays a Part in Reducing Saline Soil

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Abstract: This report deals with this analysis “Bio-Compost Influences Salinity and Plant Development by Experimenting with Greenhouse Pots” [1] and “Soil salinity reduction by bio-compost” [2]. The phenomenon of soil salinity occurs when the salt content in the soil exceeds the usual value. Salinization is the method of increasing the salt content of water. Salts are found naturally in soils and water. It is possible to achieve salinization. By means of specific processes, such as mineral sustaining or the gradual withdrawal of an ocean. Artificial irrigation may also be used to build it in addition to the overuse of chemical fertilizers in farmland. Plant growth and crop production are also hampered by salinity. This project aims to investigate the impact of salinity on plant growth as well as how management strategies can help avoid soil salinization. The compost was used to reduce the salinity of the soil. Agra's established soil hydrology model was decreased with the use of bio-compost. MS-1 is the electrical conductivity (EC) of a compost mixture of soil samples. According to the results, compost has a strong potential for reducing soil salinity and may be a highly effective alternative to chemical fertilizers for increasing plant development.

Keywords: Salinization, Electrical conductivity, Fertilizer, Reduce soil salinity.

1. Introduction

The term "soil salinity" is used to describe the presence of salt compounds in the soil. The term "salinization" has always been used to describe the process. Humans can influence the saltiness of the soil through economic and environmental factors. When the salt material turns out to be high, the dirt becomes sodium soil, which can cause a slew of issues when used as a production base. (Pooja Shrivastava 2015).

Another concern is salinity. On a daily basis, saline waters contain significant amounts of sodium. In water testing with EC, the salinity will be high (electrical conductivity). OSMOSIS is a mechanism that carries water from the soil into plant tissues. The salt in the dirt/water pulls the water back on itself if the dirt/water contains salt. As a consequence, the saltier the mud is, the better.

The more soil-water there is, the more water the plant consumes and obstructs. The overall global scarcity of water supplies, economic and environmental pollution, and widespread soil and water salinization are the most pressing global issues. The growth of the human population and the diminishing amount of land available for expansion are two

threats to agricultural sustainability. Because of the potential health consequences of consuming contaminated products and the increased output of crops due to excess salt in the soil, chemical fertilizer, the soil resulting from soil salinity owing to sewage irrigation, is a serious issue. (Stefan D. Kalev 2018).

2. Method and Material

The technique for reducing soil salinity in extremely saline soil in the Agra region, as well as crop production in agriculture due to saline soil, is rapidly deteriorating. The compost was added to saline soil from various Agra fields. (AICRP - SAS & UAS).

A. Sample collection of soil

A soil sample was obtained by resembling a field region or section. Obtaining useful information about a field in order to make soil management decisions. Land corners can be avoided by sampling evenly around the entire field. The composite sample was dispersed as dry air and non-essential material. A 100 g sample of soil was collected from three different locations and wrapped in a plastic bag. (R. B. Singh (Soil Chemist). Field areas for soil sampling like; 1. Achhnera (MS-1).

B. Composition of compost

The compost bin should be at least 35 inches wide by 36 inches tall, with a volume of 3 cubic feet. Place the compost bin near a water source in a sunny spot. The compostable materials were divided into parts ranging from 1 to 2 inches in diameter. Small compost substances encased these products in a coating of green nitrogen-rich substances, such as grassland trimmings and kitchen waste. These were put in large ones after careful stirring. Moisten the compost desk materials to a moisture content of around 40%. Cool but not saturated substances are needed. From Day 6 to Day 10, rotate the compost pile with a shovel every day, and shift the cover from the bin's area to the centre, after spinning the pile, check the moisture level and sprinkle it with the required water. Maintain an internal temperature of 150-160oF for the compost, which must be collected within 24 to 48 hours. The compost was saved from Day 11 to Day 18 to be observed every other day. Cold, dark coffee color, and unpleasant odor. When earthworms move into the compost, it is referred to as done and ready because it has cooled down and is nutrient-rich. (Hot composting 18 days

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(deep green perm-culture) composting.

C. The jar test for soil sample

The jar test for soil sample figure out the percentages of clay, silt and sand in saline soil sample. (Andrew "Drew" Jeffers 2013).

Fill glass jar halfway with soil sample, add water, but leave room at the top, and mix one table spoon of detergent to help remove the layer in the jar. The jar will be tightened after the composition was applied. Completely shake the pot. Wait 24 hours for the layer to settle before marking and measuring the layer by layer for measurement. (Shelly McRae 2017).

D. Measurement of soil salinity

It is simple and inexpensive to measure the salinity of a soil. To confirm a potential salt problem, soil tests are needed to determine the degree of saltiness and the form of salt involved. Using it to check out a sample of the web. Get a representative soil sample from the upper 6 inches and another sample to show the 6"-12" depth. The saltiness of the soil can be measured or calculated using a number of methods. Electrical conductivity measures the amount of soluble (salt) ions in the soil (ECe). Electrical conductivity was used to achieve the initial reading of the saline soil salinity in the solution and the salinity in the solution after the initial value applied by the bio-compost in the sequence method in the solution progressively decreased by increasing the amount of compost (g). (David M. Crohn et.al (2012).

3. Result and Discussion

A decrease in the salinity zone from Agran soil salinity through the use of composting means the deteriorations in organic matter by the actions of microorganisms, bacteria or fungi that function best under certain conditions. They need humidity in order to decompose organic matter and provide good aeration, as well as other conditions such as pH, temperature, color, odour, EC, and moisture content.

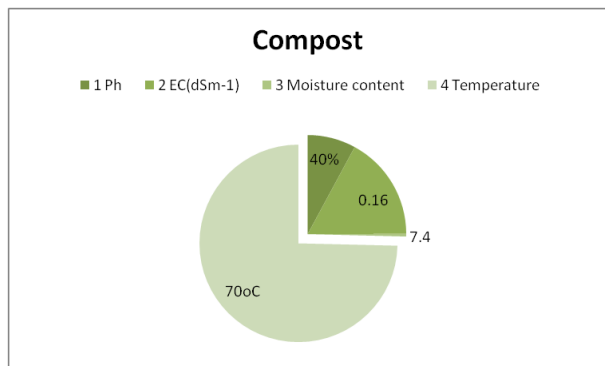


Fig. 1. Specification of compost

The findings of the soil texture study of the MS-1 soil sample are summarized in fig. 2, with silt, clay, and sand layers accounting for 40%, 12.5 percent, and 30%, respectively. The total height of the soil layer was 4 cm, and the S-2 soil sample is summarized in fig. 3 as 26.9%, 34.7 percent, and 38.4 percent silt layer, clay layer, sand layer, and silt layer, respectively. The

soil layer had a total height of 5.2cm.

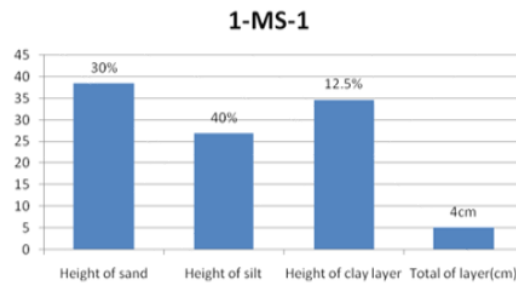


Fig. 2. Layer testing of MS-1

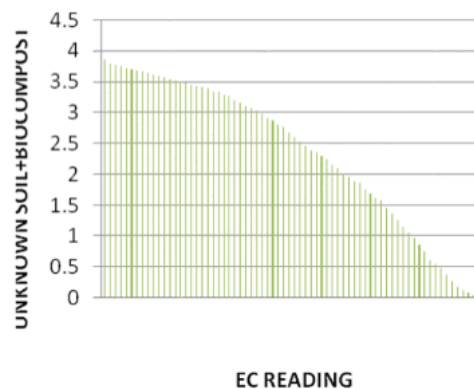


Fig. 3. Decrement of soil salinity MS-1

4. Conclusion

Framers who practice the wheat method in Agra (U.P.) and elsewhere in the world have similar climatic and soil salinity conditions. Compost is recommended because it is the most effective and long-lasting method of reducing soil salinity by turning bio-waste into compost. We used 140gm compost to minimize soil salinity from the highest value level M-1-3.88 dSm-1 to the lowest value level M-1-0.03 dSm-1 in this analysis.

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