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## Effect of compost on the growth of plant and management of the soil

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### Abstract

In this review, the main aims are to analyze the effect of compost on the growth of plants and soil management. Several experiments were carried out to find the effect of compost in agriculture. The compost like farm yard manure which are added to the soil enrich the soil properties. The compost properties are more unique because it creates the soil structure more stable and enhances the chemical as well as biological properties of the soil. The crops like cucumber shows the positive result in increment of growth and yield of plants. Apart from this compost have very good properties which can fix the fertility as well as productivity of the soil. So for sustainable agriculture the use of compost is a better way in all sphere of agriculture.

**Keywords:** Compost, cucumber, soil, sustainable

### Introduction

Compost is the main organic material that can increases the soil fertility and productivity of the soil and use of compost are widespread to make the sustainable agriculture. Apart from this the compost is a boom for the increment of the soil nutrient and provide additional qualities to the soil. (Madeleine *et al.*, 2005) <sup>[14]</sup>. Compost is defined as the decomposed organic material and it occur under aerobic conditions where degradation of organic material took place biologically. (Paulin and Peter, 2008) <sup>[16]</sup>.

The compost is the organic fertilizer and it is made from remains of plants and animals and its aim is to recycling of plants and animals which are very useful for crop production. When the process of decomposition take place it convert toxic organic matter into more useful stage which act as good agent for improving the soil fertility and crop growth. The compost has many advantages like usage of waste of landfill into other use, destruction of pathogen inoculums and weed seed. Along with it compost are useful in decomposition of petroleum and residues of herbicides and pesticides. Moreover the beneficial effect of compost like controlling of erosion and compost act as a nutrient source for the waste and degraded land (LU. Okonmah, 2011) <sup>[13]</sup>.

When there is the presence of organic matter in the soil it can increase the crop growth and also maintained the nutrient cycling. So compost not only provide the nutrients to the soil but also gave organic content to the soil. The organic matter improves the soil physical and biological properties and in addition the water holding capacity should improved. This contribution also maintain the status of biota in the soil and provide the entire nutrient to plants. (Edwards and Hailu, 2011) <sup>[12]</sup>.

### Management of soil with compost

The effect of compost is very desirable to soil as well to plants. When there is addition of soil organic matter the quality of the soil has increased due to enrichment of additional macro as well as micronutrient. The characteristics like water holding capacity of soil and maintaining of soil structure and textures are also improve. In agriculture, before the advancement of technology and when there were no use of chemicals and fertilizers the only method of application of nutrients are organic manures like compost. (Adetula O, Denton L, *et al.*, 2003) <sup>[1]</sup> It is observed that in non cultivated soil there is more than ninety five percentage of the nitrogen and sulphur found in organic matter and there is twenty five percent of phosphorus is found (Amlinger *et al.*, 2007) <sup>[4]</sup> the increment of soil organic matter in compost when compost

is produce from waste of biomass. The factors which can influence the enrichment of soil organic matter are the quantity of compost, its types and the degree of humifications of compost. Apart from this the soil properties like type of the soil, clay content and management of the soil are also affected the quality of compost. As per study the quality of compost increased when the compost is mature as compared to fresh and immature compost. This is because of higher level of stable carbon present in it. (Bouajila and Sanaa, 2011)<sup>[9]</sup> and Daniel and Bruno, 2012). Moreover, the high content of organic matter in compost also raise the level of organic carbon amount in uncultivated soil because of the effect of plant cultivation and high level of degradation of organic matter in cultivated soil. (Soheil *et al.*, 2012)<sup>[18]</sup>. The application of manure and household wastes compost improves the soil properties and also increases the level of organic carbon (Bouajila and Sanaa, 2011)<sup>[9]</sup>. In one study there was a data which showed that the application of 120t/ha of household waste compost and manure contributes the 17.4% and 1.09% of organic carbon as compared with control (0.69%) (Soheil *et al.*, 2012)<sup>[18]</sup>. Mohammed *et al.* (2004) was also conducted an experiment of use of composted organic wastes as alternative to synthetic fertilizers in two different wet and dry season which was found on the Tropical Island of Guam. In this result there was an observation that land application of organic compost increases the soil quality and soil fertility. Moreover it also increases the yield of crop. (R. Roopashree, S. Dang, *et al.*, 2008)<sup>[17]</sup>.

### Concluding remarks

The cultivation which are based on modern techniques and it consist of misuse and excessive use of chemical fertilizers and this may lead to loss of soil organic matter which have adverse effects on the environment and it can also threaten human and animal health, because when there are more usage of chemicals and fertilizers the food chain are disturbed. When there are more usage of fertilizers the growth yield are more but as a result it affect the soil characteristics, the use of organic manure and compost provides more advantages as compared to modern input like use of fertilizers. The use of compost in crop production not only promotes the nutrient enrichment but also makes the soil healthy and productive. The use of farm yard manure and compost releases the nutrient slowly but it has more effect and its effects exist for long time. the decomposition of compost are more useful because it creates more valuable effect to soil and as a consequences the fertility of the soil has maintained.

Composting is the best way to recycle organic waste and there are different factors that affect the process of composting. The review of literature has stated that many aspects of making organic fertilizer by degrading organic waste with addition of microbial inoculums, to decrease the time duration of composting process as well as improving quality of mature compost various inoculums can be added. Many biological and chemical tests can be performed to check the maturity and stability of compost. The mature compost is safe for the plants. It is concluded from this study that the compost is a best soil conditioner since it improves the structure of soil and provides better nutrients to plants. Compost can be used to lower the cause of soil pollution and can be also a cause of reducing the kitchen waste of the household.

Farm yard manure gives essential nutrients to plants and micronutrients which help to improve the quality of soil and

crops. The FYM are organic and chemical free. This application can enhances the physical properties of the soil like its structure and texture and its water holding capacity. Farm yard manure which contains nitrogen which is the main component but because of its larger, cloddier form, it can be used as mulch to protect against harsh weather, retain moisture, and provide drainage. Its natural components are released into the soil as microbial activity breaks it down. It increases the nutrient availability and fertility of the soil. Hence, the conclusion of this particular experiment is that organic manure like FYM (farm yard manure) effects in providing a good amount of nutrients to the plants hence enhancing in the growth of the cucumber. This manure FYM is an organic manure which is made from cow dung, cow urine and livestock waste which contains nitrogen, phosphorus, potassium and calcium. These nutrients are macro nutrients for the plants and these nutrients act as the major nutrients for the growth of the cucumber. In a place like India, farmers use a lot of excess fertilizers for the growth of plants which results in chemical excess vegetables and fruits, soil leaching, soil pollution and as well as water pollution. FYM can contribute good amount of nutrients required by the plants to grow healthy. From this review of literature, it was concluded that compost makes the soil fertile, have a good amount of humus and organic matter, macro nutrients and micro nutrients which is required by the plants and can affect the growth of a plants in a nutritious and a healthy way.

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