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**THE STUDY OF PLANTATION IN UPGRATED SALINE SOIL BY FARETIMA  
SPECIES IN SALINE AREA BADOPAL IN DISTRICT HANUMANGARH,  
RAJASTHAN, INDIA**

**Jaswant Singh\*, H.K. Singh, B.S. Parmar**

\* Department of chemistry, Tanta University, Sri Ganganagar Rajasthan, India

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**ABSTRACT**

Vermicompost is to full fill the high demand in agriculture field without using chemical fertilizer. There is challenging condition to grow plant in saline soil area of Badopal in Hanumangarh. In present research, The *Allium stivum*, *Triticum aestivum*, and *Brassica juncea* were studies by using 30%vermicompost and10% coal ash in saline soil for agriculture improvement. The height parameter of crops was gradually measured initially with time to upgrade of saline soil. This technique may be useful to induce the cultivation in saline soil area.

**KEYWORDS:** Vermicompost, Biomass, Coal ash.

**INTRODUCTION**

The increasing population and demand of food supply are responsible to manage the agriculture land and product. The salinity is main salty problem of north Rajasthan due to canal irrigation. The leaching is reduced due to presence of gypsum layer<sup>1</sup> and salt accumulates on the surface of earth. This is main cause of salinity in north Rajasthan. The ground salinity reduces the germination and growth of new seed whereas water salinity dies the plant. The improvement of saline soil is first need to manage the soil pollution and food productivity. In present research, the Composting is studied a biological decomposition of biomass residue by using feritima. In this process, the organic substances<sup>2</sup> are fixed to use in germination of seeds. The scope and potential of vermicompost take place by recycling of agriculture residue at standards level.

The lignite coal ash is source of metal as metal oxide<sup>3</sup>. The metals are responsible to regulate and induce the growth of plants. There are Mg, Fe, Ca and Al metals in coal ash. The source of renewable matter is present as biomass in agriculture residue<sup>4</sup>. The agricultural residues are useless as agriculture side product .The most of them are burned and destroyed in an inefficient way <sup>5</sup>. These side products are used in the formation of vermicompost to increase value added content of saline soil.

**Sample collection and selection**

The 10 kg saline soil sample was selected and collected from the Badopal nearby Hanumangarh saline area of north Rajasthan. The sample was dried and weighted under cool and shadow in open air. Now experiment samples were prepared by mixing with 30% vermicompost, 10% coal ash in dry saline soil. The composition of experiment sample is tabulated in Table 1.

*Table 1*  
**Soil sample containing Saline Soil, Vermicompost, Ash and Extra Material**

S. No.	Sample Name / place	Saline Soil	Vermi-compost	Coal Ash	Extra material	Total %
1	Simple saline soil / Badopal Hanumangarh	100%	00	00	00	100
2	I-A Treated saline soil / Badopal Hanumangarh	30%	30%	10%	30%	100

**EXPERIMENT**

The 300 gm saline soil was weighted under dry and cool condition. The 300gm vermicompost was mixed in saline soil sample. The compost was formed by using of faretima. The compost was consisting of sheep's dag, *Boerhavia Diffusa* and body part *Boerhaavia diffusa* knew as Punarnava<sup>6</sup> in the Indian system of medicine, and leaf of Sisum. this is useful in Painful micturition<sup>7</sup>, cure boils and pimples. The other 300 were consisting of local available crop residue. The 100gm coal ash which is source of metal oxide was mixed in saline soil. It is easily available and side product of thermal power plants. The mixture was thoroughly mixed and sieved for homogenous. This mixture was filled in three pots and tagged as A, B, C for plantation of *Allium stivum*, *Triticum aestivum*, and *Brassica juncea* successively. These were replaced in open airy and light condition to grow up the crop in pot. The *Allium stivum* found to be effective in the testicular functions<sup>8</sup>. The watering was taken palace time to time to germinate the seed in experimental pot. The height of every plant were noted and recorded in Table 2, Table 3 and Table 4.

**Table 2 (Garlic) *Allium stivum***

S. No.	Time in day	Height in cm 00%vermicompost	Height in cm 30%vermicompost
1	0	-	-
2	2	1.9	1.4
3	4	2.1	1.8
4	6	2.8	2.7
5	8	3.1	3.1
6	10	3.8	3.5
7	12	4.0	5.1
8	14	4.1	6.6
9	16	4.3	7.4
10	18	4.4	9.0

**Table 3 (Wheat) *Triticum aestivum***

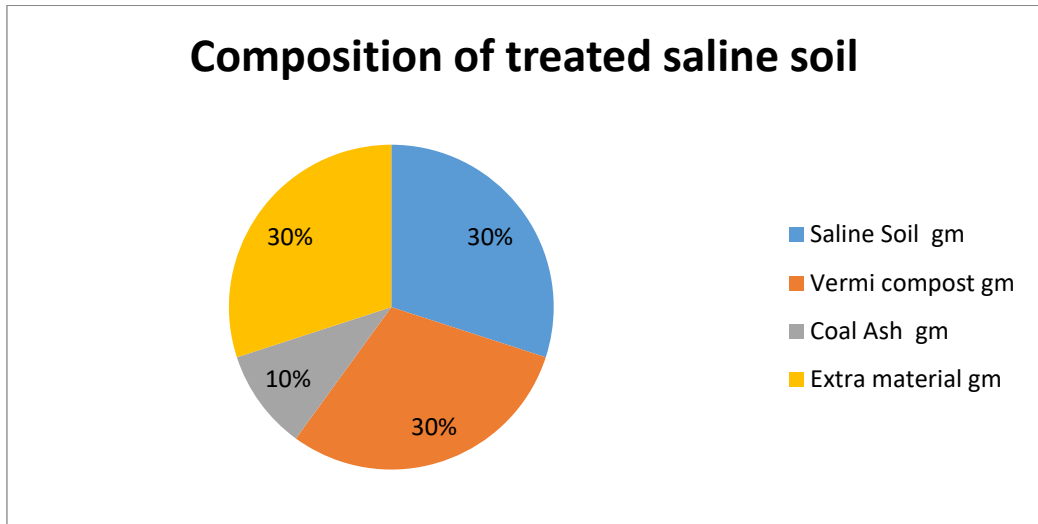
S. No.	Time in day	Height in cm 00%vermicompost	Height in cm 30%vermicompost
1	0	-	-
2	2	-	-
3	4	2.5	2.6
4	6	3.7	3.9
5	8	4.3	5.8
6	10	4.9	6.2
7	12	6.5	7.1
8	14	8.3	7.9
9	16	8.3	8.5
10	18	8.4	8.7

**Table 4 (Mustard) *Brassica juncea***

S.No.	Time in day	Height in cm 00%vermicompost	Height in cm 30%vermicompost
1	0	-	-
2	2	-	-
3	4	-	-
4	6	0.6	1.3
5	8	1.1	1.9
6	10	1.4	2.4
7	12	1.7	2.7
8	14	1.8	2.9
9	16	2.5	3.2
10	18	4.1	3.4

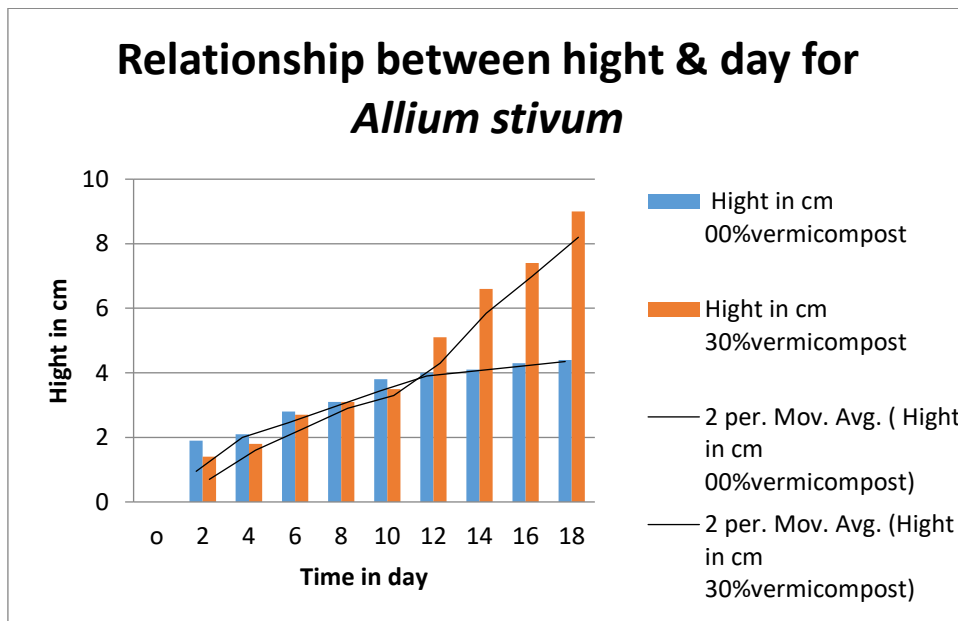
**RESULTS AND DISCUSSION**

The 30% sample of saline soil has a characteristic soil parameter due to presence of salt. The 30% vermicompost, 30% other crop residue and 10% coal ash were the part of treated saline soil. Crop residue retention on the soil surface there for reduces soil erosion<sup>9</sup>. The composition are given in Fig.1 and tabulated in Table 1.



*Fig.1 The composition of treated saline soil.*

2. The sample of saline soil is of salty nature. The *Allium Sativum* shows gradually increase in height with day in the presence of treated saline soil. After 10 day the growth of *Allium Sativum* increases fastly in treated soil whereas decrease in simple soil. The results are given in Fig.2 and tabulated in Table 2.



*Fig.2 The relation of height and day of The Allium Sativum*

3. The sample of treated saline soil, *Triticum aestivum* initially increases in height with day. The wheat is cereal crop in world. It is tolerant to salinity<sup>10</sup>. The results are given in Fig.3 and tabulated in Table 3.

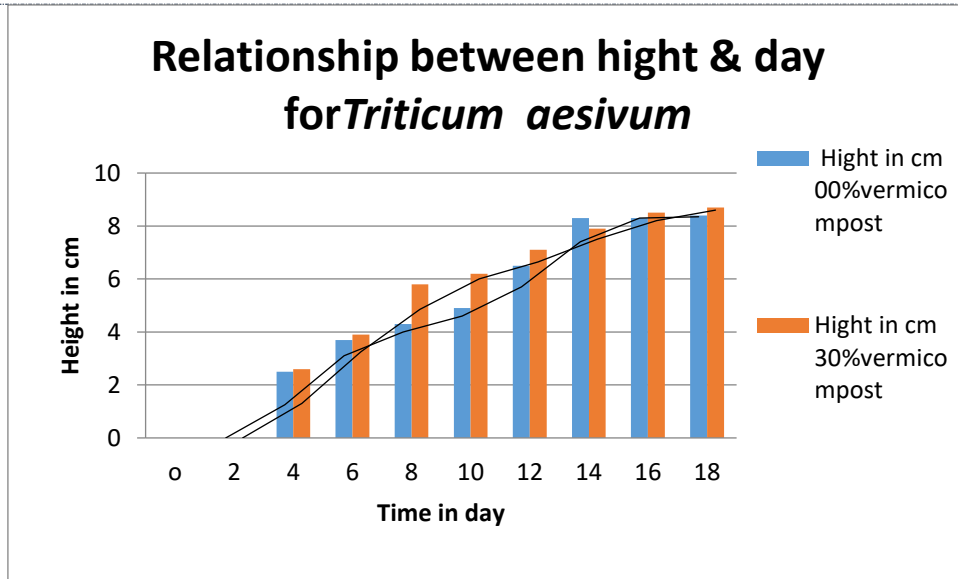


Fig.3 The relation of height and day of *Triticum aestivum*.

In the vermicompost treated soil, the beneficial height parameter is noted in *Brassica juncea*. The Na<sup>+</sup>/K<sup>+</sup>ratio show salt stress on *Brassica juncea* in the presence of commercial phosphorus fertilizers<sup>11</sup>. The results are represented in Fig.4 and tabulated in Table4

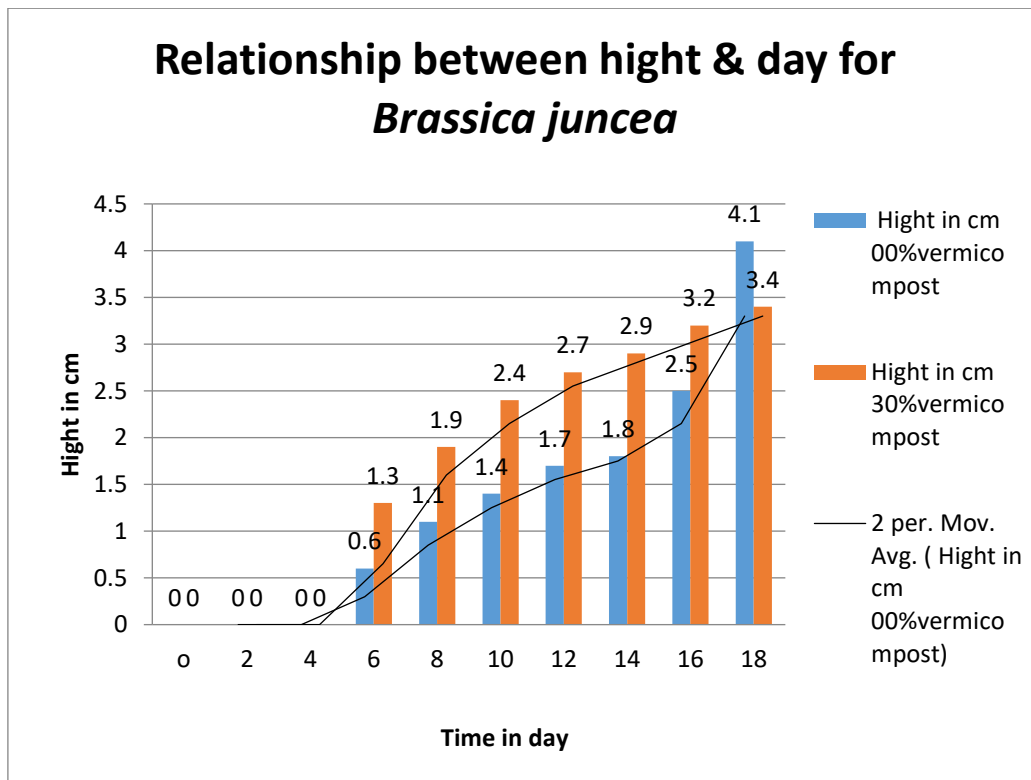


Fig.4 The relation of height and day of *Brassica juncea*.

**CONCLUSION**

The height of agriculture crop increase with the presence of vermicompost in saline soil.

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