



A comparison between the effect of compost and humus on plants (kohlrabi, broccoli, lettuce and organic lettuce)

משרד החינוך
המזכירות הפדגוגית
אגף מדעים
הפיקוח על הוראת מדע וטכנולוגיה



School name: Al Tur School For Girls

District: Al Tur

Country: Jerusalem

Introduction

Fertilizing is one of the important ways used to improve the quality of soil and prevent it from drifting. It reintroduces organic material that is used up by plants and this in turn improves the composition of soil. Organic materials binds the granules of soil together and prevents it from drifting.

Compost: is a kind of fertilizer made by fermenting the remnants of plants and it works by providing plants with the needed nutritional elements which in turn gives energy to the plants and reduces disease.

Humus: is a kind of fertilizer made by fermenting remnants of plants in the presence of earth worms which increases nutrients and helps protecting them from disease causes.

Research question

What are the effects of the type of compost on the growth of broccoli, kohlrabi, lettuce and organic lettuce?

Research Hypothesis

Plant growth is affected positively when exposed to humus more than regular compost.

Methodology

- Three containers of plants were cultivated in a greenhouse:
 - the first container has: soil, kohlrabi, broccoli, lettuce and organic lettuce
 - the second container has: compost, kohlrabi, broccoli, lettuce and organic lettuce
 - the third container has: humus, kohlrabi, broccoli, lettuce and organic lettuce
- the plants were watered twice a week using an automatic sprinkling system
- Every Saturday the stem length and number of leaves were measured at the same time (at 13:30 pm).
- We measured the average atmospheric globe measurements at the site of the study using Labdisc device.
- We took average measurements (humidity, light intensity, p-H) for soil, humus, compost using 3 in 1 moisture meter with light and pH test function device.

Results:

Table 1. The effect of using soil, compost and humus on green leaves count of kohlrabi, broccoli, lettuce and organic lettuce

leaves count	kohlrabi	broccoli	lettuce	organic lettuce
compost	8	12	11	11
humus	12	13	13	13
soil	7	7	7	7

Table 2. The effect of using soil, compost and humus on green leaves count of kohlrabi, broccoli, lettuce and organic lettuce

stem length	kohlrabi	broccoli	lettuce	organic lettuce
compost	14	19.5	23	21.3
humus	18.2	29	31.8	29.5
soil	14	11.5	20	15.2

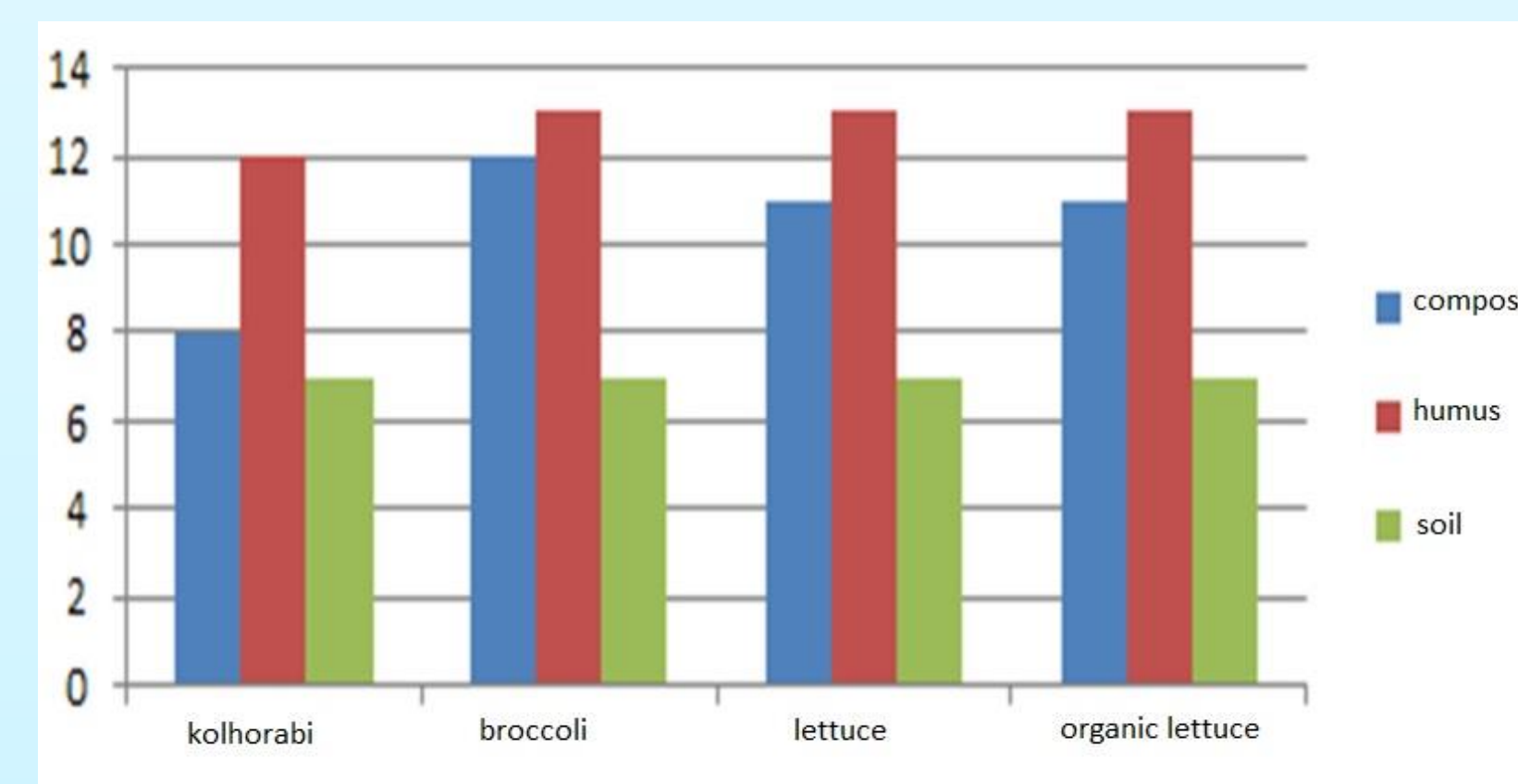
Table 3. average atmospheric globe measurements in greenhouse in our school

Humidity	Temperature	Barometric pressure
70%	22.4	921

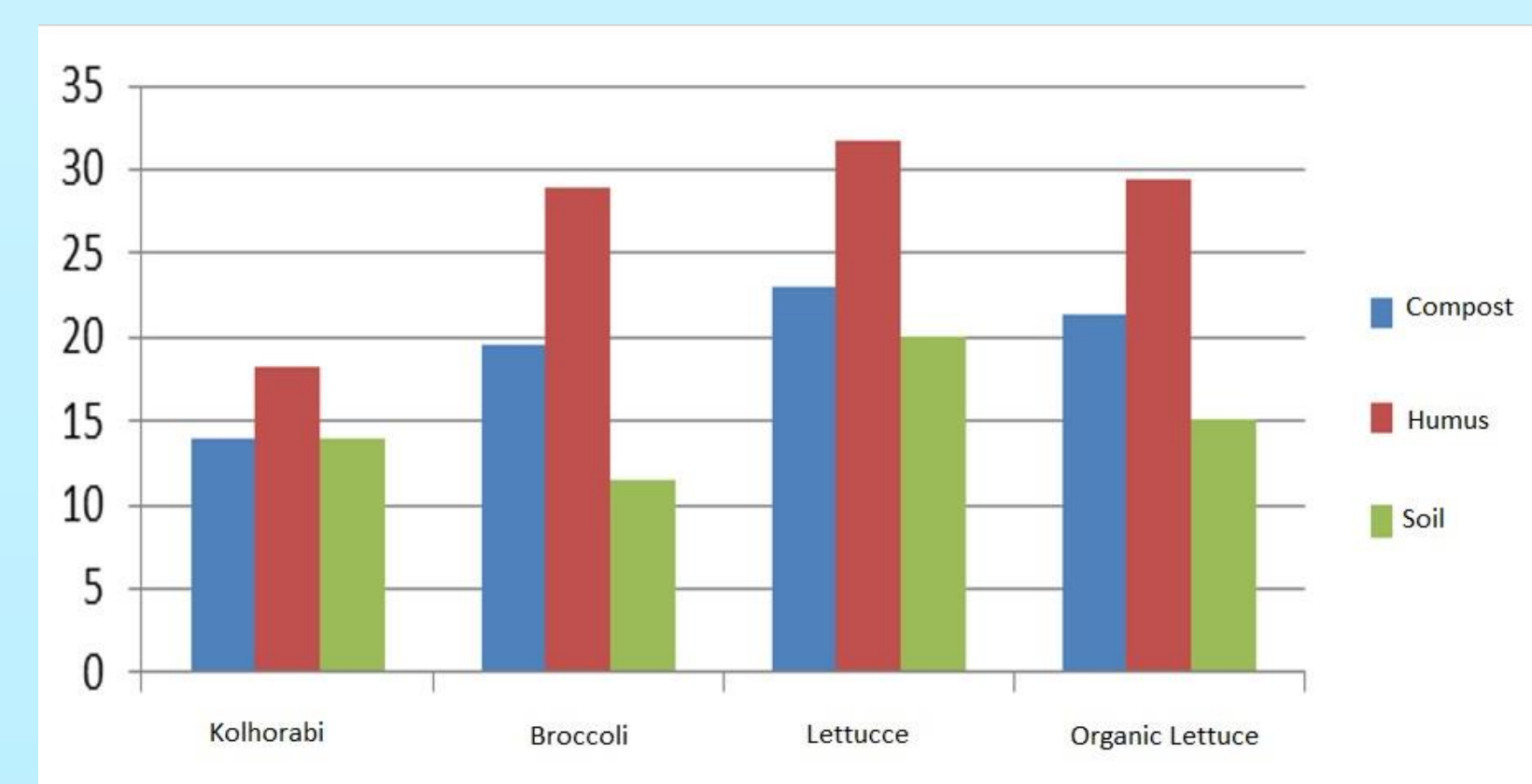
Table 4. average measurements (humidity, light intensity, pH) for soil, humus, compost in greenhouse in our school .

	Humidity	Light intensity	pH
soil	7.52	2000	6.5
Humus	8.2	2000	6.5
compost	5	2000	7

Graph1. The effect of using soil compost and humus on kohlrabi, broccoli, lettuce and organic lettuce on the number of leaves



Graph 2. The effect of using soil compost and humus on kohlrabi, broccoli, lettuce and organic lettuce on the length of the stem



The photo below shows



Conclusion

As seen from the results; humus had a significant positive effect on leaves number and plant length.

The effect was seen almost equally on all plants by the number of leaves, but broccoli was the most positively affected in length of the plant

This small experiment shows the ease of production of the humus also that it is not costly, it can be made at any household, school or Gardner's shed. Also, it could be used as a supplementary experiment to the scientific curriculum.

Recommendations

Humus is an organic material, it doesn't contain any toxins or chemicals that would be harmful to the environment

We would strongly recommend the use of this product for gardeners, people who like plants and even households and schools

In this study we studied the effect of humus only on kohlrabi, broccoli, lettuce and organic lettuce. There is much more room for further investigation of the effects of humus on various plants yielding various products

Worth Noting

A lot of interviews with scientists of high ranks, science teachers and gardeners were conducted before, during and after the research to ensure the quality of this research among these well renowned people were:

1. Dr. Ibraheem Adeleh
2. Hatem Tahhan Msc
3. Ghassan risheq

The Teacher who supervised this research has had a dedicated course in Bet Yatsiv under the supervision of Dr. Farid Hamdan

References

- <https://www.gardeningknowhow.com/composting/basics/compost-vs-humus-in-garden.htm>
- <https://plantcaretoday.com/humus-rich-soil-garden-foundation.html>
- <https://www.youtube.com/watch?v=SxIBIAZmeal>

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