

Compost or Fertilizer?

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Purpose: The purpose of my investigation is to test if compost, fertilizer, or organic fertilizer works better for growing lettuce.

Hypothesis: If I plant 3 lettuce plants with fertilizer, organic fertilizer, or compost with the same type of soil, then I think compost will result in better growth within a month. I think this because compost includes better nutrients and is all natural and organic.

Fertilizer can be natural or manufactured that include chemicals that can help a plant's development. Is it better to use chemical fertilizer or natural/ organic fertilizer like compost to

grow plants? There are so many options of fertilizer someone can use, but which one is really the best? The main elements in fertilizer are nitrogen, phosphorus, and potassium (N-P-K). A lot of people agree that compost is way better than store bought fertilizer. Compost is organic material that is all natural fertilizer for the soil. (Editors of Encyclopaedia of Britannica, 2019)

What is the difference between fertilizer and compost? The difference between fertilizer and compost is the ingredients. Compost is all organic and natural and includes natural materials that have decomposed. For example, compost contains egg shells, fruit skins, seeds, tea bags, coffee filters and much more. Fertilizer on the other hand can be chemical based or organic. Compost mainly feeds the soil. “The easiest way to tell the difference between compost and fertilizer is that compost feeds the soil while fertilizer feeds the plants”. (Matt Gibson and Erin Marissa Russell,2020) Fertilizer can mainly be organic or synthetic. “Synthetic fertilizers are made by chemically processing raw materials”. Organic fertilizers are made from naturally occurring mineral deposits and organic material, such as bone or plant meal or composted manure”. (Matt Gibson and Erin Marissa Russell,2020)

How does lettuce take in different fertilizers and compost? The nutrients in organic fertilizer are released slowly because it is not water soluble. On the other hand synthetic fertilizer nutrients can be released much faster because it is water soluble. Applying too much synthetic fertilizer can kill the plant. Synthetic fertilizers are better to apply in early spring and organic fertilizer is much better to apply in the fall. Compost also releases its nutrients slowly but too much compost may kill or harm the plants.

What do plants need to grow? Plants usually need five things to grow: light, water, nutrients, air and space. It is best if plants get light from the sun but they can also get light from grow lights. The nutrients plants mainly need are calcium, magnesium, and sulfur. Those

nutrients are usually in fertilizers and compost because the soil doesn't always provide them. Water is absorbed by the roots and if the plant doesn't get enough water it will dry out and die. If plants don't have air and space to grow then it can't survive. (Needs of plants, 2019) (Determine the effects of various nutrients on growth plant, no date)

Do plants need fertilizer and why do they need it? Soil doesn't always include the essential nutrients a plant needs. A lot of times plants need fertilizer because fertilizer includes the nutrients plants need. The main nutrients in fertilizer are nitrogen, phosphorus, and potassium. Fertilizer includes all of these nutrients and more. For example, calcium, magnesium, and sulfur.

How does someone grow lettuce? Lettuce is a vegetable. Lettuce is one of the easiest plants to grow. Lettuce likes cool weather so you can grow it during spring or fall. Lettuce also likes to receive full sun in the fall. Watering lettuce is pretty simple, the soil to be moist at all times. Someone can also add any compost, fertilizer, organic fertilizer or any plant nutrients to the plants that need them. Lettuce doesn't take long to grow. Lettuce can be ready to pick after about 30 to 70 days. The lettuce is ready when it has grown about 3 to 6 inches long. When harvesting the lettuce you may get a pair of scissors and cut the leaves near the stem. (How to harvest lettuce, 2000-2020)

What is black seeded simpson lettuce? There are many different lettuces. Black seeded simpson is one kind of lettuce. When fully grown it's a light green wide lettuce with curled leaves. It is known for its delicate and tender leaves. Also known for its tolerance for heat and cold growing seasons. (Black seeded simpson, 2020)

What is N-P-K? The main ingredients/nutrients in fertilizer are nitrogen (N), phosphorus (P), and potassium (K). The order of the letters can also show the ratio of these nutrients for

fertilizer. These nutrients focus on different parts of the plant. Nitrogen (N) essentially focuses on the leaves so they are hearty and green. Phosphorus (P) primarily focuses on the roots for sturdy roots. On the other hand Potassium (K) focuses mainly on the overall plant. (What N-P-K numbers mean, 2019)

Is compost good for the environment and the plants/food? Compost is better than chemical fertilizer in so many ways, for example, the environment. Compost saves water, recycles, reduces plastic usage, and healthier for the plants/food being planted. Compost absorbs and holds the water longer than regular fertilizer. Making compost recycles and reuses tea bags, vegetable waste, and so much more. Also making compost saves the usage of a plastic packaging rather than buying chemical fertilizers. Compost provides all the nutrients a plant needs and makes the plant healthier to eat because of all the organic and natural nutrients instead of chemicals.

In conclusion I can conclude from this paper that compost will be the best option for growing lettuce. All of the information leads to compost being better in many ways either for the environment or the plants itself. Compost is all natural and organic and will grow stronger and healthier plants. Compost is also great for the environment because it is all organic and made from home.

Materials

- Organic Fertilizer
- Chemical Fertilizer
- Compost
- Black seeded simpson lettuce seeds
- Water
- Pots or any container to grow your plants
- soil

Procedure

Step 1: I grab my pot and fill the pot with $\frac{3}{4}$ of soil.

Step 2: Grab 3 lettuce seeds and plant them an inch deep into the soil together.

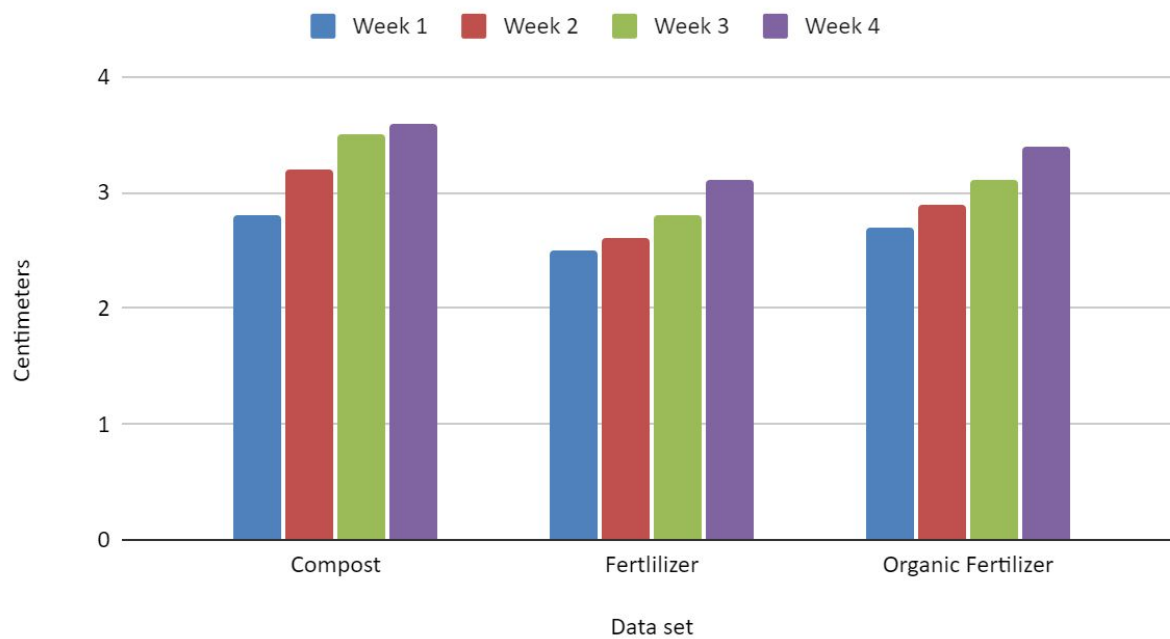
Step 3: Add any fertilizer, organic fertilizer, or compost here based on their instructions.

Step 4: Place the container by a window with a lot of sunlight.

Step 5: Water your plants every 2-3 days a week.

Step 6: Repeat the last 3 steps every week or whenever needed for the next 4 weeks.

Growth in Centimeters by Week



Results

My results after 4 weeks of growing lettuce with either compost, chemical fertilizer, and organic fertilizer was that compost grew the healthiest and bigger lettuce. After 4 weeks the lettuce grown with compost was 3.6 centimeters. My hypothesis turned out to be correct.

Conclusion

My results after 4 weeks of growing lettuce with either compost, chemical fertilizer, and organic fertilizer was that compost grew the healthiest and bigger lettuce. This proved my hypothesis

right. My hypothesis was if I plant 3 lettuce plants with fertilizer, organic fertilizer, or compost with the same type of soil, then I think compost will result in better growth within a month. I think this because compost includes better nutrients and is all natural and organic. The lettuce with compost grew to a total of 3.6 centimeters bigger than the rest of the lettuce plants. This is all important because whenever you need to plant lettuce you can use compost for better growth results. In conclusion, my hypothesis was right and the compost is better for growing bigger and healthier lettuce.

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