Plant Growth Experiment using Biochar, Fungi and Organic Fertilizers



# Topic

* Local Food Production

# Objective

* Compare the growth rate and health of plants started in plain soil versus soil enhanced with biochar inoculated with mycorrhizal fungi and organic fertilizers.

## Environmental Education Activity

# Age/Grade Range

* 8-18+

# Group Size

* In pairs or small groups
* No maximum or minimum

# Time

* Set-up: 24 hours + 5-10 minutes
* Activity: 30 minutes + 4 weeks of maintenance and observations

# Materials

* Potting soil
* Vegetable seeds
* Medium peat pots (2 per group)
* Grow light with timer
* Biochar (can be purchased at garden supply stores)
* Rain water, or tap water that has been left to stand in an open container overnight to allow the chlorine to evaporate
* Mycorrhizal fungi (can be purchased at garden supply stores)
* Fish or seaweed fertilizers
* Measuring spoons and measuring cups
* Labels for pots
* Watering device
* Large bowl for mixing soil

# Set Up

1. Prepare biochar mixture: ¼ cup biochar, 4 cups of rain water or unchlorinated water, 3 tsp fish or seaweed fertilizer, ¼ teaspoon mycorrhizal fungi. Soak for 24 hours.
2. The next day, prepare other materials and activity stations.

# Activity Directions

1. Set up your control group. Fill one peat pot with regular potting soil and plant three or four seeds. Water with unchlorinated water. Label this pot as *potting soil*.
2. Using bowl, mix four or five cups of potting soil with biochar and fertilizer solution until soil is moist like a wrung-out sponge (to test, squeeze a handful of soil in your hand, only a few drops should come out). Fill peat pots with fertilized soil and plant one with three or four seeds. Label this pots as *fungi fertilizer.*
3. Place all plants under grow light and set timer for 14 hours of light/day
4. Keep soil moist of both pots by watering regularly with unchlorinated water, for 4 weeks.
5. Once a week fertilize the *fungi fertilizer* plants with a small amount of fish/seaweed fertilizer added to un-chlorinated water or compost tea.

# Questions/Points of Discussion

* Record date that the seeds germinate and note any differences between the groups.
* Record weekly measurements of plant height.
* Record weekly observations of plants including number of leaves and general plant health.
* Take or draw pictures to illustrate differences between the test and control plants.