

Appendix B: Pre- and Post- Content Assessment

1. A friend wants you to design a compost pile for them and has provided you with the materials to set up the pile. Their requirement is that they want the composting process to work as fast as possible. To meet this requirement, you decide to set up the pile _____.

- a) In a very shaded area
- b) In direct sunlight
- c) In partial shade
- d) In partial sunlight

Correct Answer: In direct sunlight

2. A person observes a handful of completely decomposed plant material, or humus, which has been in a compost pile. Which statement best describes the humus?

- a) The humus is made of large rock pieces and living organisms.
- b) The humus is made of small rock pieces and decomposed organisms.
- c) The humus is made of decomposed waste and microorganisms.
- d) The humus is made of decomposed waste and a mix of both micro- and macro-organisms.

Correct Answer: The humus is made of decomposed waste and a mix of both micro- and macro-organisms.

3. After setting up a compost pile, which of the following variables does NOT need to be monitored?

- a) Moisture content
- b) Temperature
- c) Size of bacteria
- d) The ratio of green plant material to brown plant material

Correct Answer: Size of bacteria

4. Besides the location of a compost pile, what other variables speed up the breakdown of waste?

- a) Mixing or turning over compost ingredients
- b) Monitoring the moisture of your column
- c) Adding microbes to speed up breakdown
- d) All of these

Correct Answer: All of these

5. Breakdown of waste and dead organisms in a compost pile can cause an increase in temperature of the pile. This is due to which process being performed by the bacteria and organisms in the humus?

- a) Cellular respiration
- b) Photosynthesis
- c) Anabolism
- d) Hydrolysis

Correct Answer: Cellular respiration

6. Is water a source of food for plants and animals? Why or why not?

- a) Yes, because food is anything that is needed by plants and animals, and water is needed by plants and animals.
- b) Yes, because food is anything that provides energy to plants and animals, and water provides energy to plants and animals.
- c) No, because liquids cannot be food for plants and animals, and water is a liquid.
- d) No, because food must contain molecules that have carbon atoms linked to other carbon atoms, and water molecules do not have carbon atoms linked to other carbon atoms.

Correct Answer: No, because food must contain molecules that have carbon atoms linked to other carbon atoms, and water molecules do not have carbon atoms linked to other carbon atoms.

7. Of the following, which best describes the benefits of composting?

- a) It reduces human-caused environmental impact through reducing waste in landfills.
- b) It returns nutrients to the soil and thus permits the reduction of artificial fertilizers.
- c) It prevents soil erosion by making the soil better aerated and increasing its capacity to hold water.
- d) All of the above.

Correct Answer: All of the above.

8. The breakdown of waste within a compost pile is called _____.

- a) Anabolism
- b) Competition
- c) Decomposition
- d) Photosynthesis

Correct Answer: Decomposition

9. There are two types of composting: aerobic and anaerobic. What is the difference?

- a) Aerobic requires oxygen and anaerobic does not.
- b) Anaerobic requires oxygen and anaerobic does not.
- c) Aerobic requires bacteria and anaerobic does not.
- d) Anaerobic requires bacteria and aerobic does not.

Correct Answer: Aerobic requires oxygen and anaerobic does not.

10. What would happen to a compost pile if all bacteria and other organisms in the soil were removed?

- a) The pile would continue working normally.
- b) The breakdown of waste and other materials would be faster than normal.
- c) The breakdown of waste and other materials would stop.
- d) A mixture of these would occur.

Correct Answer: The breakdown of waste and other materials would stop.

11. When considering the role of bacteria in compost, they can be best described as:

- a) Consumers
- b) Producers
- c) Decomposers
- d) Competitors

Correct Answer: Decomposers

12. When designing a compost pile, which materials are best to prevent too much moisture?

- a) Using all smaller materials that pack down tightly and leave no space for water to drain
- b) Using a mixture of smaller and larger materials leaving small spaces for water to drain
- c) Using all larger materials leaving large spaces in between for water to drain
- d) None of these

Correct Answer: Using a mixture of smaller and larger materials leaving small spaces for water to drain

13. Which of the following best describes the purpose of cellular respiration?

- a) To provide energy for cell activities
- b) To produce sugar for storage in cells
- c) To release oxygen for breathing
- d) To supply carbon dioxide for photosynthesis

Correct Answer: To provide energy for cell activities

14. Which of the following best describes what happens to the energy released as bacteria break down rotting materials in compost piles?

- a) The energy evaporates and goes into the air.
- b) The energy remains in the pieces of waste and materials.
- c) The energy disappears.
- d) The energy is transferred from the rotting material to the surroundings.

Correct Answer: The energy is transferred from the rotting material to the surroundings.

15. Your compost pile has an unpleasant odor. You think that the problem is that there is not enough air due to over-watering and compaction of materials. What do you do?

- a) Add dry materials and turn the materials to aerate
- b) Increase the water being added
- c) Both A and B
- d) Neither A nor B

Correct Answer: Add dry materials and turn the materials to aerate