



## Module 3: Soil Science and Soil Health

### Lesson C Quiz: Living Soils and Ecosystem Services

#### QUIZ LINKS:

[Module 3 Lesson C Quiz - Responder Link](#)

#### Multiple Choice

Which is the correct definition of mycorrhizae?

- A. Fungal diseases that attack plant roots and reduce growth.
- B. Root hairs that form when plants lack enough nutrients.
- C. A type of bacteria that fixes nitrogen for legumes.
- D. Root extensions for reach, exchange nutrients for carbon

What ratio of C:N do microbes thrive?

- A. 24:1
- B. 5:1
- C. 25:1
- D. 50:1

Why is too much nitrogen bad?

- A. It prevents photosynthesis from taking place.
- B. It causes the soil to turn acidic overnight.
- C. There is a rapid breakdown and loss of carbon
- D. It makes plants stop absorbing water through their roots.

When bacteria and fungi start decomposition, what happens after?

- A. Nutrients are released, N, P, and S are mineralized.
- B. Soil becomes sterile and loses all microbes.
- C. Organic matter turns directly into fossil fuels.
- D. The soil particles fuse into larger rocks.

Microbes in the root zone can produce auxin, cytokinin, gibberellin, which \_\_\_\_:

- A. Causes roots to stop growing and shut down.
- B. Makes plants produce seeds much more slowly.
- C. Increases leaf thickness but decreases root function.
- D. Makes roots grow, slow aging, and increase stress tolerance.

How does healthy soil create a healthy planet?

- A. By reflecting more sunlight back into the atmosphere.
- B. By keeping plants short and reducing wind damage.
- C. It is the largest land carbon pool, which stores more carbon than plants and the atmosphere.
- D. By making all soil pH neutral no matter the environment.

Which of the following is a soil degradation practice?

- A. Salinization.
- B. Drip irrigation.
- C. Cover cropping.
- D. Crop rotation.

#### True or False

Beneficial microbes produce antimicrobials, prey on pathogens, and compete for resources.

### **Short Answer**

Explain how microbes and mycorrhizae help plants grow.

Answer Should:

- Define mycorrhizae and its role in nutrient exchange.
- Explain how microbes in the root zone produce hormones and aid decomposition to release nutrients.
- Connect healthy soil to larger environmental benefits, like carbon storage and supporting the planet.
- Be at least 3 sentences.

### **Short Essay**

Explain how mycorrhizae and soil microbes support plant growth and why healthy soil is important for the environment. Include how microbial activity affects nutrients and the role of carbon-to-nitrogen balance.

Answer should:

- Describe how soil microbes produce plant hormones and release nutrients through decomposition.
- Mention the importance of a balanced carbon-to-nitrogen (C:N) ratio for microbial activity.
- Explain how healthy soil benefits the environment, including carbon storage.
- Be at least 5 sentences minimum with clear examples.