

„ Biodiversity and ecological system” Fungi, the hidden network

Questions to the subject

Fungi, Mushrooms, Toadstools –
what’s the difference?



Good Luck!

Answers: (one or more answers might be correct)

1. **How are fungi different from plants?**
 - Fungi have cell walls made from chitin,
 - fungi do not use photosynthesis,
 - fungi lack chlorophyll in their cells.
 - all of the above**

2. **How do fungi get their nutrition?**
 - photosynthesis,
 - they are heterotrophic**
 - they are autotrophic

3. **The mycorrhiza is a special form of ...**
 - symbiosis**
 - parasitism
 - food-poisoning
 - traditional Bavarian dancing

4. **There is a network between fungi and algae, the lichens.**
 - Fungi get organic nutrients from the algae
 - algae get water and mineral-salts from the fungus
 - algae get shelter from the fungi
 - it is a symbiotic relationship
 - all of the above**
 - none of the above

5. **How does man/woman profit from fungi?**
 - Some mushrooms and truffles provide delicious food,
 - some fungi help in fighting diseases,
 - they break down organic matter so it can be reused by the nutrient cycles,
 - some fungi make bread rise,
 - some fungi produce alcohol,
 - all of the above.**

6. **There is also an interaction between animals and fungi. Pick the right answers.**

- slugs cultivate fungi for food
- **some termite species are cultivating fungi for food**
- **some insects inject their eggs into fungi**
- **some fungi parasitize insects (caterpillars, chrysalis) and other animals**
- **birds build their nests in trees attacked by bracket fungi**

7. **Which of the following fungi destroy their hosts?**

- Porcini Mushroom *Boletus edulis*
- **Honey-Fungus *Armillaria mellea***
- Field Mushroom *Agaricus campestris*
- Fly Agaric *Amanita muscaria*
- Tinder fungus *Fomes fomentarius*

8. **Which ones are symbiotic partners of the trees?**

- **Porcini Mushroom *Boletus edulis***
- Honey-Fungus *Armillaria mellea*
- Field Mushroom *Agaricus campestris*
- **Fly Agaric *Amanita muscaria***
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9. **What is meant by the “hidden network”?**

- a secret circle of undercover agents
- **the interconnection of tree roots and mycelial strings (mycorrhiza)**
- an invisible spider web
- the dark net

10. **We are talking about ecological systems. Where can you find fungi?**

- In dry meadows,
- in mires,
- in saltwater,
- in sweet water,
- in icy water,
- in fields,
- in all kinds of forests,
- on stones,
- **all of the above.**

11. Some families and species of fungi exist all over the world.

If you think about the reason, what would you answer?

- people took them with them when they emigrated to other countries and continents
- the spores are globally dispersed by the wind,
- the spores are spread by animals
- all of the above,**
- none of the above.

12. “I have picked a nice mushroom”, your friend asks. “Can I eat it?”

What do you answer?

- In principle, you can eat all fungi. But some of them only once.
- Liking the smell and the taste? Then you can eat it.
- If you cook the fungus, the poison will be destroyed,
- If animals have eaten part of the fungus, it's a good one,
- You must know the species you've picked. Check it up in a mushroom book or ask an expert.**

13. You went to the woods near Laufen and found the following species: Boletus edulis, Amanita phalloides. Agaricus campestris and Armillaria mellea, Fomes fometarius. You want to cook a meal for your host family. Which species will you not take?

- Amanita phalloides**
- Boletus edulis
- Agaricus campestris
- Armillaria mellea
- Fomes fometarius
- all of them

14. Fungi play a vital role in ecosystems. Pick out the right answers!

- they effect climate change
- most of the trees grow better without mycorrhiza.
- fungi can cause many problems in agriculture**
- fungi play an important role in human and animal nutrition.**

15. When is the main fruiting season of mushrooms in central Europe?

- in spring
- in summer
- in autumn**
- in winter
- perennial

16. Discuss, why you can breed

Agaricus campestris, but you'll fail with Boletus edulis.

Answer:

Boletus edulis lives in a **mycorrhiza** with either **spruce or beech-trees. (2 points)**

Agaricus campestris is a **saprophyt**, which feeds on **organic matter. (2 points)**

17. Discuss the role of fungi as an economical factor. (6 points)

The students should mention 6 of the following factors.

- decomposers of organic matter;
- producing humus soil
- symbionts of plants and animals;
- natural enemies of pests;
- food for animals and humans
- bioremediation agents,
- indicator species of healthy old meadow habitats
- indicators for climate change
- Lichenes are indicators for biological parameters

Fungi play vital roles in the **biosphere**. They are essential to the **recycling of nutrients** in all terrestrial habitats because they are the dominant **decomposers** of the complex components of plant debris, such as cellulose and lignin.

They are returning their minerals to the soil and gases to the air, thus making them available for the next generation of plants and animals and **ensuring the continuous natural cycle of life**.

The majority of grasses and trees require a **mycorrhizal** relationship with fungi to survive.

Yeasts have been used for thousands of years in the production of beer, wine, and bread.

Fungi not only directly produce substances that humans use as **medicine**, but they are also versatile tools in the vast field of **medical research**.

- Some fungi attack insects and, therefore, can be used as **natural pesticides**.