

Advanced Agriculture Concepts

Agriculture · Practice Test · 18 Questions

1. What is the primary biological process that allows leguminous plants to fix atmospheric nitrogen into a usable form for themselves and other plants?

- A) Photosynthesis
- B) Respiration
- C) Nitrification
- D) Symbiotic nitrogen fixation by Rhizobium bacteria

2. In precision agriculture, what technology is most commonly used to create detailed maps of field variability for targeted fertilizer or pesticide application?

- A) Spectroscopy
- B) GPS and GIS
- C) Drones with thermal imaging
- D) Soil moisture sensors

3. Which soil horizon is characterized by the accumulation of leached minerals like clay, iron oxides, and aluminum, often appearing lighter in colour?

- A) O horizon (organic matter)
- B) A horizon (topsoil)
- C) B horizon (subsoil or illuvial layer)
- D) C horizon (parent material)

4. Hydroponics is a method of growing plants without soil. What essential nutrient is often omitted or significantly reduced in hydroponic nutrient solutions because it is readily available in dissolved oxygen?

- A) Potassium
- B) Nitrogen
- C) Phosphorus
- D) Carbon

5. The Green Revolution, beginning in the mid-20th century, significantly increased global agricultural production. What was a key technological innovation associated with it?

- A) Genetically modified organisms (GMOs)
- B) Development of high-yield crop varieties
- C) Widespread adoption of no-till farming
- D) Introduction of synthetic fertilizers

6. What is the term for the practice of cultivating crops and raising livestock on the same land simultaneously, aiming for a more integrated and sustainable system?

- A) Monoculture
- B) Crop rotation
- C) Polyculture
- D) Intercropping

7. Which type of pesticide is specifically designed to target and kill fungi that cause plant diseases?

- A) Herbicide
- B) Insecticide
- C) Fungicide
- D) Rodenticide

8. The Cantareira Water System, one of the largest urban water supply systems in the world, faces significant challenges due to agricultural runoff. What is a major pollutant from agriculture that can contribute to eutrophication of water bodies?

- A) Heavy metals
- B) Sediments
- C) Nitrates and phosphates
- D) Pesticides

9. What is the primary role of mycorrhizal fungi in the soil ecosystem regarding plant nutrition?

- A) Decomposing organic matter
- B) Fixing atmospheric nitrogen
- C) Enhancing nutrient uptake (especially phosphorus) by plant roots
- D) Protecting plants from soil-borne pathogens

10. Integrated Pest Management (IPM) is a sustainable approach to managing pests. Which of the following is a core principle of IPM?

- A) Exclusive reliance on chemical pesticides
- B) Using a combination of biological, cultural, and chemical tactics
- C) Prioritizing synthetic fertilizers
- D) Eliminating all insect populations

11. What is the specific term for the process of applying a beneficial microorganism to a plant or soil to enhance plant growth and health?

- A) Biopesticide
- B) Biofertilizer
- C) Bioremediation
- D) Biotechnology

12. Silage is a type of fermented fodder used as animal feed. What is the primary objective of the ensiling process?

- A) To dry out the forage completely
- B) To preserve forage by converting sugars into lactic acid
- C) To increase the protein content
- D) To remove all moisture

13. What is the primary difference between conventional tillage and conservation tillage (e.g., no-till or minimum till)?

- A) Conventional tillage uses more water.
- B) Conservation tillage leaves more crop residue on the soil surface.
- C) Conventional tillage is more effective at weed control.
- D) Conservation tillage requires heavier machinery.

14. The Bt gene, commonly used in genetically modified crops, confers resistance to certain insects. What is the source of this gene?

- A) A bacterium
- B) A virus
- C) A fungus
- D) Another plant species

15. What does the term 'agroforestry' describe?

- A) The science of soil composition
- B) The integration of trees and shrubs into farming systems
- C) The study of insect behavior in agriculture
- D) The management of water resources for irrigation

16. Which of the following is a primary function of earthworms in agricultural soils?

- A) To suppress weed growth
- B) To aerate the soil and improve its structure
- C) To directly provide nitrogen to plant roots
- D) To break down complex organic matter into simple sugars

17. What is the main challenge posed by soil salinization in agriculture?

- A) Increased soil fertility
- B) Reduced water availability for plant uptake
- C) Enhanced nutrient leaching
- D) Promoted microbial activity

18. What is the primary mechanism by which drip irrigation conserves water compared to flood irrigation?

- A) It increases evaporation rates.
- B) It delivers water directly to the plant roots, minimizing runoff and evaporation.
- C) It requires a higher flow rate.
- D) It saturates the entire soil profile evenly.