

# Advanced Concepts in Deforestation and Reforestation

Deforestation & Reforestation · Answer Key · 12 Questions

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**1. Which of the following biogeochemical cycles is most significantly disrupted globally by large-scale deforestation, leading to increased atmospheric concentrations of greenhouse gases?**

- A) Nitrogen cycle
- B) Phosphorus cycle
- C) Carbon cycle**
- D) Sulfur cycle

**2. The phenomenon of 'biotic homogenization' in deforested or fragmented landscapes is primarily driven by:**

- A) Increased species richness due to edge effects
- B) The dominance of generalist species that tolerate disturbed habitats**
- C) The introduction of invasive pathogens
- D) Enhanced gene flow between previously isolated populations

**3. Tropical deforestation has been empirically linked to altered regional precipitation patterns. Which of the following mechanisms best explains this phenomenon?**

- A) Increased albedo effect reducing atmospheric moisture
- B) Reduced evapotranspiration leading to less atmospheric moisture recycling**
- C) Lower soil temperatures inhibiting convective uplift
- D) Increased wind speeds dispersing cloud cover

**4. In the context of reforestation, 'assisted natural regeneration' (ANR) is a strategy that relies primarily on:**

- A) Large-scale planting of genetically modified saplings
- B) Mechanical removal of invasive plant species
- C) Creating favorable conditions for the natural regrowth of existing tree seeds and seedlings**
- D) Enrichment planting with high-value timber species

**5. The 'Tragedy of the Commons' theory, when applied to deforestation, suggests that overexploitation is likely when:**

- A) Forest resources are privately owned and managed
- B) There are strong legal protections and enforcement mechanisms
- C) Forest resources are held in common and access is unregulated**
- D) Local communities have exclusive usufruct rights

**6. Microclimatic changes associated with deforestation, particularly in tropical regions, include:**

- A) Increased humidity and decreased diurnal temperature range
- B) Decreased ambient temperature and increased soil moisture
- C) Increased solar radiation reaching the soil surface and reduced humidity**
- D) Lower wind speeds and increased cloud cover

**7. The role of soil organic matter loss as a consequence of deforestation is critical because it directly impacts:**

- A) Increased cation exchange capacity and nutrient availability
- B) Enhanced microbial diversity and decomposition rates
- C) Reduced soil aggregation, leading to increased erosion and water infiltration**
- D) Decreased susceptibility to soil compaction

**8. Which of the following is a primary ecological driver of the decline in amphibian populations observed in deforested areas, beyond habitat loss itself?**

- A) Increased predation by forest-dwelling birds
- B) Changes in water pH and increased UV-B radiation exposure due to canopy removal**
- C) Higher rates of disease transmission from arboreal mammals
- D) Competition with newly introduced insect species

**9. The effectiveness of carbon sequestration in reforestation projects is highly dependent on the chosen tree species and their:**

- A) Rate of ornamental flower production
- B) Capacity for rapid biomass accumulation and wood density**
- C) Palatability to local herbivores
- D) Susceptibility to wind damage

**10. Ecological succession in a deforested area typically proceeds from pioneer species to climax communities. Which of the following is characteristic of early successional stages?**

- A) Dominance of slow-growing, shade-tolerant trees
- B) High species diversity and complex vertical structure
- C) Rapid growth of light-demanding herbaceous plants and shrubs**
- D) Stable soil nutrient levels and low rates of decomposition

**11. The concept of 'ecosystem services' provided by forests is critically impacted by deforestation. Which of the following services is most directly and severely diminished?**

- A) Provision of recreational opportunities
- B) Regulation of local and regional climate through evapotranspiration and carbon storage**
- C) Aesthetic landscape value
- D) Production of non-timber forest products

**12. Soil erosion rates are significantly exacerbated by deforestation due to:**

- A) Increased plant root binding of soil particles
- B) Reduced impact of rainfall on exposed soil surfaces
- C) Loss of protective canopy cover and ground litter, leading to direct raindrop impact**
- D) Decreased soil moisture, which increases soil cohesion