

Designing Sustainable Irrigation Systems

Part 1: Dialogue

Sophia (Landscape Architect): Our client wants a **water-efficient landscape**, so we need to focus on smart irrigation strategies.

Ethan (Colleague): Agreed. I think **drip irrigation** should be our primary system since it delivers water directly to plant roots.

Sophia: Yes, **drip irrigation** reduces water waste and minimizes evaporation compared to traditional sprinklers.

Ethan: Another option is **rainwater harvesting**. We can design storage tanks to collect runoff for irrigation use.

Sophia: That's a great idea. Using **rainwater harvesting** helps conserve potable water and lowers utility costs for the client.

Ethan: We should also include a **smart irrigation controller** to adjust watering schedules based on weather conditions.

Sophia: Exactly. A **smart irrigation controller** can monitor soil moisture and prevent overwatering.

Ethan: For plant selection, we could incorporate **xeriscaping** principles, using drought-tolerant species that require minimal irrigation.

Sophia: Good point. **Xeriscaping** not only saves water but also reduces maintenance costs for the property.

Ethan: Finally, we need to conduct a **water table analysis** to determine underground water availability and prevent overuse.

Part 2: Comprehension Questions

1. What is one advantage of **drip irrigation**?

(A) It increases water runoff

- (B) It reduces evaporation and water waste
 - (C) It requires daily maintenance
 - (D) It waters the entire landscape at once
2. Why is **rainwater harvesting** beneficial for irrigation?
- (A) It removes excess water from the soil
 - (B) It provides a sustainable water source
 - (C) It eliminates the need for any irrigation system
 - (D) It increases water consumption
3. What role does a **smart irrigation controller** play in sustainable landscaping?
- (A) It schedules watering based on soil moisture and weather
 - (B) It increases water usage
 - (C) It requires manual operation at all times
 - (D) It replaces all irrigation systems
4. Why is **water table analysis** important in irrigation planning?
- (A) It determines soil fertility
 - (B) It increases landscape size
 - (C) It eliminates the need for irrigation
 - (D) It assesses underground water availability
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Part 3: Vocabulary with Definitions

- **Drip irrigation (点滴灌漑)** – A system that delivers water directly to plant roots, reducing waste and evaporation.
- **Rainwater harvesting (雨水貯留)** – Collecting and storing rainwater for irrigation and other uses.
- **Smart irrigation controller (スマート灌漑コントローラー)** – A device that adjusts watering schedules based on weather and soil conditions.

- **Xeriscaping (ゼリ スケーピング)** – A landscaping method that uses drought-resistant plants to reduce water use.
 - **Water table analysis (地下水位分析)** – The study of underground water levels to ensure sustainable irrigation planning.
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Part 4: Answer Key

1. **What is one advantage of drip irrigation?**
☒ (B) It reduces evaporation and water waste
2. **Why is rainwater harvesting beneficial for irrigation?**
☒ (B) It provides a sustainable water source
3. **What role does a smart irrigation controller play in sustainable landscaping?**
☒ (A) It schedules watering based on soil moisture and weather
4. **Why is water table analysis important in irrigation planning?**
☒ (D) It assesses underground water availability