PLANT LIFE IN THE TAKLIMAKAN DESERT

Words

Look for the following words as you read the passage. Match each word with its correct definition.

Words

1. accumulate
2. adapt
3. determine
4. dilute
5. diverse
6. evaporation
7. extreme
8. fringe
9. mechanism
10. minimize[1]
11. moisture
12. occupy
13. prolific
14. resilient
15. sparse
16. stressor
17. swing
18. thrive
19. transitional
20. violent

Definitions

A. adj., relating to change from one type to another

B. n., behavior[2] to deal with difficult situations

C. v., to gradually increase over time

D. v., to be in a place; exist in

E. v., to reduce to the least possible amount

F. v., to grow well

G. n., the edge of something

H. adj., varied, of many kinds

I. v., to change to fit a situation or environment

J. adj., strong; sudden and destructive

K. n., wetness or water

L. adj., tough, able to endure difficult conditions

M. adj., small in numbers or amount

N. adj., very severe or difficult

O. v., to make weaker by mixing with water

P. n., the change from liquid to gas; loss of water to the air

Q. n., a sudden or big change

R. v., to decide

S. n., something that causes great difficulties

T. adj., producing a lot of something

[1]BrE: minimise

[2]BrE: behaviour

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Reading

Plant Life in the Taklimakan Desert

The Taklimakan Desert, second in size only to Africa's Sahara Desert, occupies some 337,600 square kilometers[1] (130,300 square miles) of northwestern China—an area about the size of Finland. Sparse rainfall, daily temperature swings of up to 20°C (68°F), and violent sandstorms make it one of the most extreme environments on Earth.

Eighty-five percent[2] of the Taklimakan Desert consists of shifting sand dunes, some up to 250 meters[3] tall, that are largely free of vegetation. Yet, transitional areas between the open desert and oases on the desert fringe support diverse plant forms that not only have adapted to the harsh conditions but actually thrive there.

Successful desert plants are resilient to scorching summers and frigid winters, drought, and high-salt conditions. The plants' principal defense[4] against these environmental stressors consists of drawing in as much water as possible while minimizing moisture loss. Three Taklimakan plants—*Populus euphratica*, *Tamarix ramosissima*, and *Alhagi sparsifolia*—represent some of the most diverse, prolific vegetation in the area; although they share many survival strategies, each has developed unique coping mechanisms of its own.

The Euphrates poplar, *Populus euphratica*, the only tall tree in the Taklimakan ecosystem, has an extensive root system that allows it to absorb water far from the standing tree. *P. euphratica* controls evaporation by opening and closing the stomata, or tiny pores, on the leaf surface in response to the amount of moisture being lost through the leaves to the surrounding air. These stomata generally remain open during the day while the plant conducts photosynthesis.

P. euphratica can endure high-salt concentrations in the soil. It takes in unlimited amounts of salt through the roots, up the stem, and into leaves, where it dilutes the normally toxic salt by increasing the number and volume of its cells.

Tamarix ramosissima, a small tree with needlelike leaves commonly known as tamarisk or salt cedar, takes in enormous amounts of water via a far-reaching root system many times the size of the plant above ground. Like *P. euphratica*, tamarisk can naturally determine when to close stomata to inhibit evaporation and regulate photosynthesis.

[1]BrE: kilometres
[2]BrE: per cent
[3]BrE: metres
[4]BrE: defence

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Tamarisk has a high tolerance for salty conditions and even produces its own salt, which it accumulates in special glands between the leaves and then releases onto leaf surfaces. Leaves dropping to the ground make the soil more saline, or salty, giving tamarisk a competitive advantage over less salt-tolerant plants.

Alhagi sparsifolia, a spiny shrub, thrives in the Taklimakan Desert even though it uses large amounts of water, especially during the summer months. With only a few wispy roots in the upper soil, it is unaffected by occasional flooding. Most of its roots reach down deep, where they take up water from as far as sixteen meters below ground. Unlike *P. euphratica* and *T. ramosissima*, which open and close stomata according to conditions on the leaf surface, *A. sparsifolia* does so according to hydraulic conductance—that is, the ease with which it takes up groundwater.

Although desert plants have adapted for their own survival, they also help protect their ecosystem by stabilizing sand dunes, preventing erosion, presenting a barrier to sandstorms, and conserving biodiversity.

Answer the questions about **Plant Life in the Taklimakan Desert**.

Questions 1–3

Choose the correct letter, ***A***, ***B***, ***C***, *or* ***D***.

1. Most of the Taklimakan Desert is covered with
   - **A** tamarisk.
   - **B** spiny plants.
   - **C** sand dunes.
   - **D** diverse plant life.

2. Plants in the Taklimakan Desert
   - **A** grow only in areas above 250 meters high.
   - **B** thrive in extreme conditions.
   - **C** are not very hardy.
   - **D** are mostly tall trees.

3. Environmental stressors in the Taklimakan Desert include
   - **A** sparse sunlight.
   - **B** lack of salt in the soil.
   - **C** extreme temperatures.
   - **D** periods of heavy rainfall.

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Questions 4–7 1. 2. 3. 4.

*Which of the following mechanisms used by plants to survive in the desert environment are mentioned in the passage? Choose **four** answers from the list below.*

A Having strong roots that can hold on during violent sandstorms

B Closing pores to minimize loss of moisture

C Occupying a place in the shade of a larger plant to avoid the scorching desert sun

D Diluting the salt that the plant takes in

E Having large root systems that can reach water far from the plant

F Adding salt to the soil to minimize competition from other plants

G Accumulating water in the leaves of the plant

My Words

Write the words that are new to you. Look them up in the dictionary and write their definitions.

Words	Definitions

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