Name: _____ Date: _____

How Cacti Survive in the Desert

Circle group

A desert may get only a few inches of rain in a whole year. When rain does fall, it often comes in a sudden storm. Most plants could not live there. But cacti can. Almost every part of a cactus helps it collect water, store it, and keep it.

Look at the roots first. A cactus has wide, shallow roots. They spread far from the plant, but they stay near the surface. When it rains, the roots soak up water within hours. This happens before the water can sink too deep or dry up in the sun.

Next comes the thick green stem. It works like a tank. It holds a lot of water inside spongy tissue. Many cacti have stems with pleats like an accordion. As the plant fills with water, the pleats spread apart and the stem swells. In a long drought, the stem slowly gets smaller as the plant uses its stored water.

The outside of the stem has a thick, waxy skin. The wax keeps water from escaping. Most plants open tiny pores in their leaves in the day to take in air. They lose water through those pores. Many cacti open their pores mostly at night, when the air is cooler. So they lose much less water.

Cacti have almost no ordinary leaves. Their spines are a kind of leaf that changed shape. The spines keep hungry animals away from the juicy stem. They also give a little shade. All of this makes the cactus one of the best-adapted plants on Earth.

Questions

1. What kind of roots does a cactus have?

_____

_____

2. How does a cactus stem store water?

_____

_____

3. What does the waxy skin do?

_____

_____

4. When do many cacti open their pores?

_____

_____

5. What are cactus spines?

_____

_____

6. Why do shallow roots help a cactus?

_____

_____

7. Why do pleated stems help in a drought?

_____

_____

Words to know

desert: a dry region that gets very little rain
drought: a long period with little or no rain
pores: tiny openings in the skin or leaves of a plant
spongy: soft and full of tiny holes that hold liquid
adapted: changed over time to fit a certain way of life

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

How Cacti Survive in the Desert

Triangle group

A desert may receive only a few inches of rain in a whole year, and what falls often arrives in a sudden storm. Most plants could not live in such conditions, but cacti manage because nearly every part of their bodies is designed to collect water, store it, and hold on to it.

Start with the roots. A cactus has a wide, shallow root system that spreads far from the plant but lies close to the surface. When rain falls, the roots absorb water within hours, long before it can sink out of reach or evaporate in the sun.

The thick green stem is the next important feature, because it works like a storage tank, holding a large supply of water inside spongy tissue. Many cacti have stems with pleats like an accordion. As the plant fills, the pleats spread apart and the stem swells. During a long drought, the stem slowly shrinks again as the plant uses its reserve.

The outside of the stem is covered with a thick, waxy skin that keeps water from escaping. Most plants open tiny pores in their leaves during the day to take in air, and they lose water through those pores. Many cacti open their pores mostly at night, when the air is cooler, and so they lose far less.

Cacti have almost no ordinary leaves, since their spines are actually a kind of leaf that has changed shape. The spines protect the juicy stem from hungry animals, and they cast a little shade on the surface. Together, these features make the cactus one of the best-adapted plants on Earth.

Questions

1. What kind of roots does a cactus have?

_____

_____

2. How does a cactus stem store water?

_____

_____

3. What does the waxy skin do?

_____

_____

4. When do many cacti open their pores?

_____

_____

5. What are cactus spines really?

_____

_____

6. Why is it helpful for a cactus to have shallow roots?

_____

_____

7. Why do pleated stems help a cactus in a drought?

_____

_____

Words to know

desert: a dry region that gets very little rain
drought: a long period with little or no rain
pores: tiny openings in the skin or leaves of a plant
spongy: soft and full of tiny holes that hold liquid
adapted: changed over time to fit a certain way of life

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

How Cacti Survive in the Desert

Square group

A desert may receive merely a few inches of rainfall in an entire year, and whatever does fall frequently arrives in a sudden, violent storm. Most plants could never survive such punishing conditions, but cacti manage to thrive because nearly every part of their bodies has been designed to gather water, store it, and conserve it.

Consider the roots first. A cactus possesses an extensive, shallow root system that spreads far beyond the plant yet lies close to the surface. When rain falls, these roots absorb water within hours, long before it can seep out of reach or evaporate under the scorching sun.

The thick green stem is the next crucial feature, because it functions like an enormous storage tank, holding a substantial reserve of water inside spongy tissue. Many cacti have stems with pleats like an accordion. As the plant fills, the pleats spread apart and the stem swells, and during a prolonged drought the stem gradually shrinks again as the plant draws upon its reserve.

The exterior of the stem is covered with a thick, waxy skin that prevents moisture from escaping. Most plants open tiny pores in their leaves during the day to take in air, and they lose a great deal of water through those pores. Many cacti open their pores primarily at night, when the air is cooler, and consequently lose far less.

Cacti have almost no ordinary leaves, since their spines are actually a kind of leaf that has changed shape. The spines defend the juicy stem from hungry animals, and they cast a little shade across its surface. Together, these features make the cactus one of the most remarkably adapted plants on Earth.

Questions

1. What sort of root system does a cactus possess?

_____

_____

2. How does a cactus stem store a reserve of water?

_____

_____

3. What is the purpose of the waxy skin?

_____

4. When do many cacti open their pores?

5. What are cactus spines actually?

6. Why is it advantageous for a cactus to have shallow roots?

7. Why do pleated stems benefit a cactus during a prolonged drought?

Words to know

desert: a dry region that gets very little rain
drought: a long period with little or no rain
pores: tiny openings in the skin or leaves of a plant
spongy: soft and full of tiny holes that hold liquid
adapted: changed over time to fit a certain way of life

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

For the teacher: How Cacti Survive in the Desert

Each student sheet carries a shape, not a level. The same topic and facts, written three ways.

Circle: How Cacti Survive in the Desert

Easier · 258 words · Flesch-Kincaid grade 2.9

1. Wide, shallow roots that spread far but stay near the surface.
2. It holds water inside spongy tissue, like a tank.
3. It keeps water from escaping.
4. Mostly at night.
5. A kind of leaf that changed shape.
6. They can soak up rain fast, before it sinks deep or dries up.
7. The pleats let the stem swell when it is full and shrink as the plant uses the water.

Triangle: How Cacti Survive in the Desert

This passage · 269 words · Flesch-Kincaid grade 7.1

1. Wide, shallow roots that spread far from the plant but stay near the surface.
2. It holds water inside spongy tissue, like a tank.
3. It keeps water from escaping.
4. Mostly at night.
5. A kind of leaf that has changed shape.
6. They can soak up rain quickly before it sinks deep or dries up.
7. The pleats let the stem swell when it is full and shrink as the plant uses its water.

Square: How Cacti Survive in the Desert

Harder · 280 words · Flesch-Kincaid grade 9.5

1. An extensive, shallow system that spreads far but lies close to the surface.
2. It holds the water inside spongy tissue, like a storage tank.
3. It prevents moisture from escaping.
4. Primarily at night, when the air is cooler.
5. A kind of leaf that has changed shape.
6. They can absorb rain quickly before it seeps deep or evaporates.
7. The pleats let the stem swell when full and shrink gradually as the plant uses its reserve.