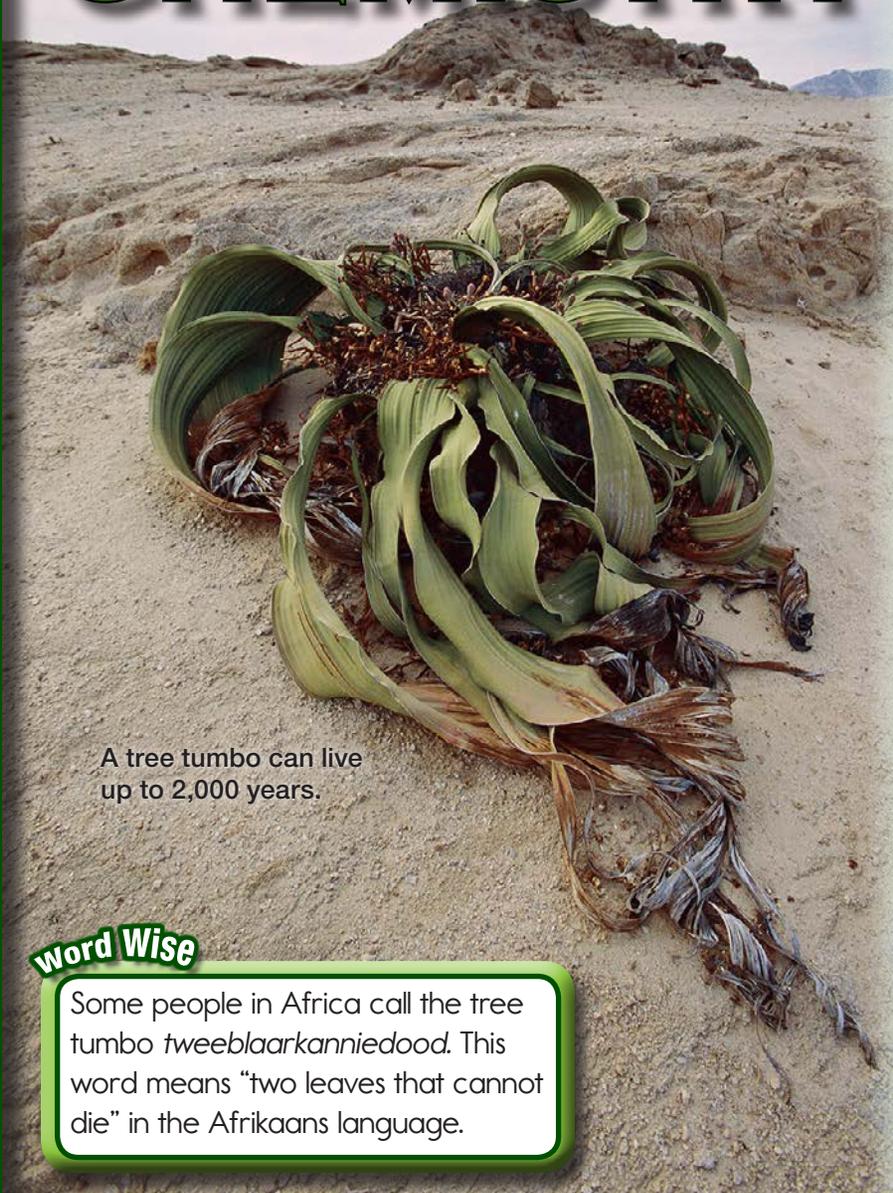


PLANT CHEMISTRY



A tree tumbo can live up to 2,000 years.

Word Wise

Some people in Africa call the tree tumbo *tweeblaarkannedood*. This word means “two leaves that cannot die” in the Afrikaans language.

A LIVING SOLAR FACTORY

What’s the world’s most unusual-looking plant? One candidate is the tree tumbo plant in Africa’s Namib Desert. A tree tumbo has only two leaves. But over time, its large leaves split into many long strips. The leaves can grow up to 9 meters (30 ft.) long!

Just like other green plants, a tree tumbo makes its own food through a chemical change called *photosynthesis*. Plants need carbon dioxide, light, and water for photosynthesis. Air has plenty of carbon dioxide, and deserts have a lot of light. But to get water, a tree tumbo uses its one large root. Sometimes a whole year will pass without rain in the Namib Desert. To stay alive, tree tumbo can also capture dew on its leaves and channel the water to its root.

Photosynthesis doesn’t create or destroy any atoms. Instead, it rearranges atoms in carbon dioxide and water molecules. This process creates two new products—oxygen and *glucose* (a sugar). A tree tumbo uses the glucose for energy. It releases oxygen into the air.

WHERE TREE TUMBOS LIVES



The tree tumbo grows along the coasts of Angola and Namibia in Africa. Its range is shown in yellow.

Nutrition Strikes!

Plants need carbon dioxide, water, and light to make food. But they also need minerals, such as phosphorus, potassium, and nitrogen, to grow and develop.

Phosphorus and potassium are usually found in the soil. They come from worn-down rocks. But nitrogen is harder for plants to get. The air around you is about 78 percent nitrogen. But plants can't use this nitrogen unless it's combined with something else.

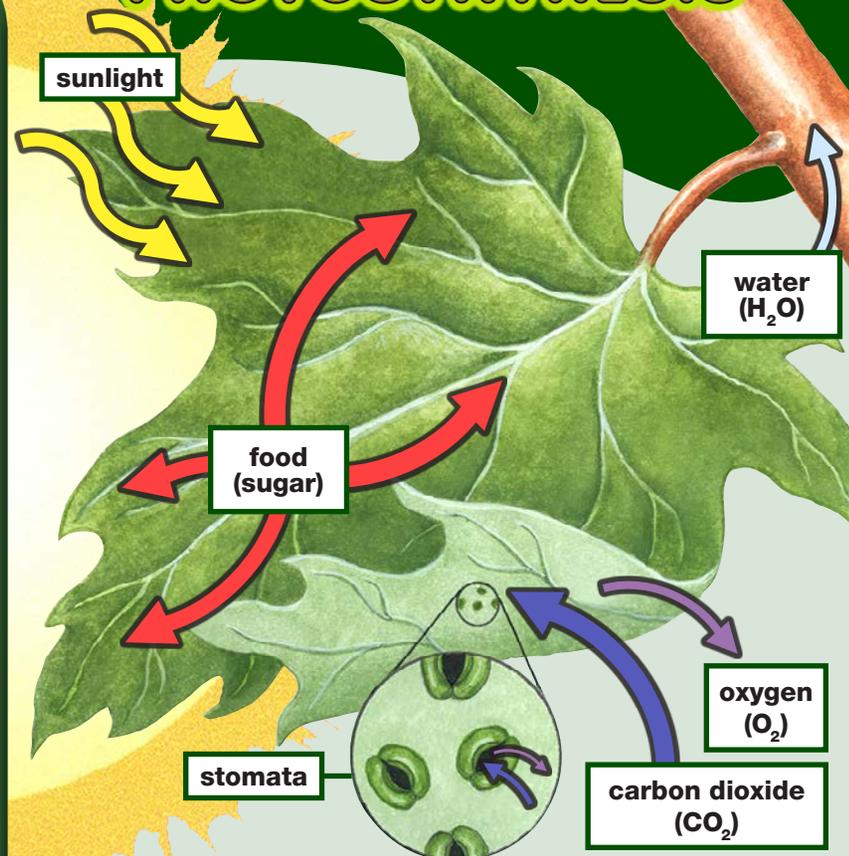
Lightning can help plants get nitrogen. It adds energy to the air and starts a chemical change. The extreme heat of a lightning strike makes nitrogen and oxygen in the air combine. Once this change happens, it can't be undone. Rain carries the new molecule down into the soil, where plant roots can absorb it.

Microorganisms in the soil also make nitrogen available to plants. They get nitrogen from breaking down plant and animal material.



After many years of use, fields can run out of important minerals. So farmers add fertilizer, which provides minerals to their crops.

PHOTOSYNTHESIS



During photosynthesis, plants use carbon dioxide, water, and sunlight to produce food. They release oxygen into the air.

Do You Know?

The red color of maple leaves in the fall is a result of a chemical change. The plant's sugars combine with a compound in the leaves. The result is a new chemical that looks red.

