

## The Sands of Time

### Springboard:

Students should read “The Sahara” and answer the questions.

**Objective:** The student will be able to explain how desertification occurred and continues to occur in the Sahara Desert.

**Materials:**

- The Sahara (Springboard handout)
- Farmland to Desert (handout)
- More Farmland to Desert? (handout)
- Double Deserts? (handout)

**Terms to know:**

- desertification** - process by which land changes and dries to become desert
- fossil** - remains of a plant or animal preserved in rock
- arable** - suitable for farming
- arid** - dry
- steppe** - semi-arid grassland

### Procedure:

- After reviewing the Springboard, explain that *in this lesson the student(s) will examine another geographical issue facing Africa: the desertification of the Sahel.*
- Hand out copies of “Farmland to Desert,” “More Farmland to Desert?” and “Double Deserts.” The student(s) should read the articles, highlighting or noting meaningful passages. They should then complete the Venn diagram.
- Have students share their answers and discuss these and future problems. (*Students should realize that loss of farmland could lead to further problems for Africa in terms of hunger and famine.*)
- Finally, discuss how this issue is an example of Human-Environmental Interaction. (*In this case the humans who live in the region have used the land in such a way that has negatively affected it. Now Africans in this region are paying the price, as they are gradually losing more and more farmable land.*)
- Discuss what other themes are present in this lesson (*Region in terms of desert, non-farmable land, etc; Place as characteristics of the land, etc.*)
- For lesson closure or for homework, have the student(s) add examples from this lesson to the “African Geography” organizer.

# THE SAHARA

The Sahara Desert is the largest in the world with a total land area of 3½ million square miles, 8% of the world's land. Of that, 80,000 square miles surround oases and can sustain a variety of plant and animal life. The desert is actually made up of three main smaller regions, the Western Sahara, the Central Plateau, and the Libyan Desert.

The Western Sahara is made up of sandy and rocky land. Almost no rain falls in this region, but in some places underground water makes its way to the surface, creating oases with date palms and other trees. These water supplies are used for irrigation in areas nearby where a number of crops are grown. Animals in these areas include gazelle, antelopes, jackals, foxes, badgers, and hyenas.

The Central Plateau, with elevations averaging between 1,900 to 2,500 feet, extends from northwest to southeast across the Sahara. This region includes many high peaks, some more than 11,000 feet high. Rainfall is very scarce in this region, but many of the area's mountains are snow-capped at times.

The Libyan Desert is the driest part of the Sahara. Almost no rain falls, and there are few oases. This is the area of high, sandy dunes that are often photographed as the Sahara. These massive dunes can be as high as 400 feet!

Which number in miles describes the total size of the Sahara?

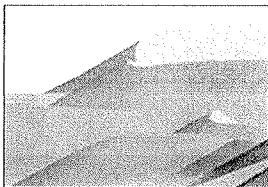
- A. 3.500,000
- B. 3,500,000.
- C. 35,000.000
- D. 35,000,000.

The **MOST IMPORTANT** characteristic of an oasis is the presence of

- A. plant life.
- B. animal life.
- C. desert.
- D. water.

3½ million square miles is to the total land area, as 80,000 square miles is to the

- A. water on the desert.
- B. sandy and rocky land.
- C. underground water.
- D. moist and fertile land.



This picture was MOST LIKELY taken in the

- A. Western Sahara.
- B. Central Plateau.
- C. Libyan Desert.

# THE SAHARA - ANSWERS & EXPLANATIONS

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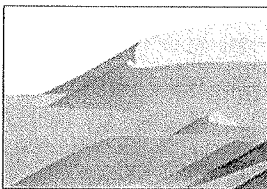
- A. 3,500,000
  - B. 3,500,000. \*
  - C. 35,000,000
  - D. 35,000,000.
- (3½ or 3.5 million means 3 million, 500 thousand. This number is shown in Choice B.)*

The **MOST IMPORTANT** characteristic of an oasis is the presence of

- A. plant life.
  - B. animal life.
  - C. desert.
  - D. water. \*
- (While plant and animal life are found there and oases are in deserts, to exist at all they must have a water source.)*

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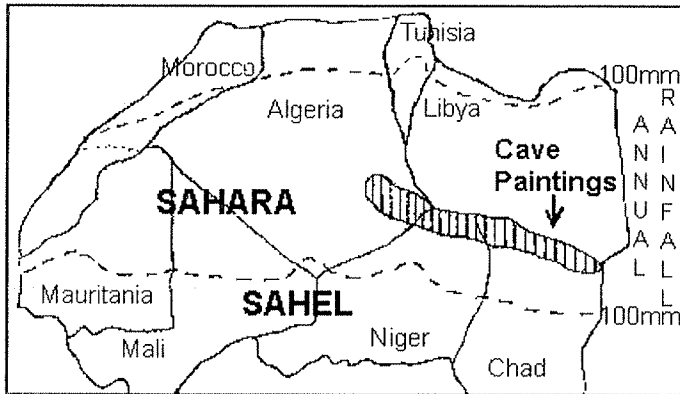
- A. water on the desert.
  - B. sandy and rocky land.
  - C. underground water.
  - D. moist and fertile land. \*
- (80,000 square miles around oases sustaining plant and animal life, rules out choices B and C. Choice D best explains why the land can sustain life.)*



This picture was MOST LIKELY taken in the

- A. Western Sahara.
  - B. Central Plateau.
  - C. Libyan Desert. \*
- (This is a picture shows the high, sandy dunes described in the last paragraph.)*

# FARMLAND TO DESERT



Washington, D.C. - A U.S. government report issued yesterday confirms that the Sahara Desert was indeed at one time a fertile region of great grasslands and early farming villages. Ever since the discovery of 5,000-year-old cave paintings in southern Libya showing large herds of cattle, and other animals,

scientists have been convinced the Sahara had not always been the dry region it is today. German researchers, using a new scientific approach, found that desertification of North Africa occurred only a few thousand years ago due to a change in the tilt of the earth's axis.

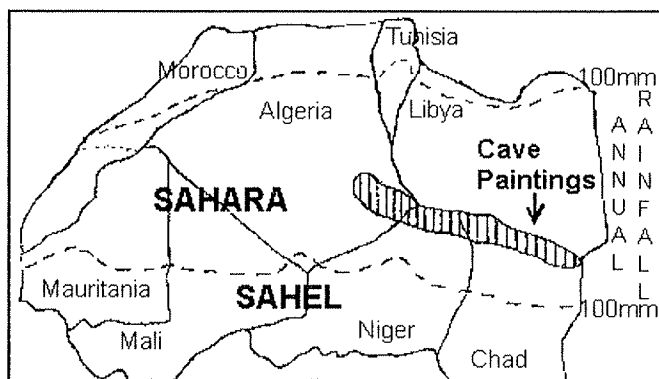
The researchers concluded that the desertification of North Africa occurred in two specific time periods. The first from about 6,700 to 5,500 years ago and was less severe. The second from about 4,000 to 3,600 years ago saw a sharp increase in temperatures in the area and a dramatic decrease in precipitation. Fossilized pollen found in North Africa proved that before then a variety of grasses and low shrubs covered the region. Today little grows in the Sahara except in oases and surrounding areas.

Scientists believe that a one-degree change in the earth's tilt on its axis was the cause of a tremendous difference in the climate of North Africa! Before the change in tilt, they say, the African continent received heavy, seasonal rainfall much as India and Southeast Asia do today. But then the climate changed suddenly. Within a few hundred years, the Sahara changed from a region of lush, green grasslands to arid desert.

Some scientists think the climate change may also have been responsible for the birth of river valley civilizations in Africa and southwest Asia. Such scientists suggest that the loss of arable land in North Africa forced early settlers to move in search of more fertile and well-watered land. They believe the farmers' travels brought them to the Nile River Valley and possibly as far as the Tigris-Euphrates River Valley in the Middle East. The researchers, however, are quick to point out that their theory requires more study.

Whether the Nile Valley settlers came from the Sahara or not remains to be seen, but what is certain is that the Sahara is not what it used to be. A mere shift of one degree's tilt of the earth's axis resulted in drastic changes in the climate and thus, the plant and animal life of almost all of North Africa.

# MORE FARMLAND TO DESERT



Washington, D.C. - Yesterday world newspapers reported that the Sahara Desert was once a land of grassy fields and farms, but environmental changes turned the lush land to dry desert. While the change that made news occurred more than 3,000 years ago, the same change taking place today has

caused little concern and has received almost no coverage from the press.

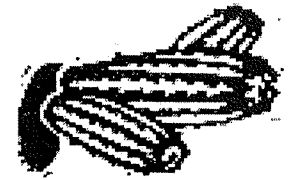
This picture in yesterday's InspirEd Issue was used to show that cave paintings of animals found in Libya led scientists to explore the cause of the climate change that caused the animals, plants, and the people who ate them to leave the area. Yet the same picture can be used to show another change. In the Sahel the region south of the Sahara, plants and animals are once again disappearing, but for a very different reason.

The Sahel is a region of transition from the dry Sahara to humid plains to the south. The semi-arid steppes of the Sahel provide grasses and shrubs for livestock that graze there. Some crops such as millet and peanuts are also grown. Scientists have learned that desertification occurred in the Sahara due to a shift in the earth's axis, but desertification in the Sahel is occurring because of man. Use of land for grazing and farming is destroying the Sahel.


The Sahel is a natural green belt. The plants of the region help protect the soil from erosion. By clearing land for crops, cutting trees and shrubs for firewood, and allowing animals to overgraze the steppe grasses, humans have changed the Sahel. Natives told our reporters that their parents once hunted wild antelope, fox, and other animals that are no longer found there. They said only 40 years ago they could produce 700 baskets of grain, enough to feed themselves and have some to sell. Now, with a field three times larger, they produce less than 15% of what they did and can barely feed their families.

Destruction of the natural plants of the region has led to widespread soil erosion. In order to grow enough crops to feed the population, more and more land is cleared, causing even greater erosion. The Director of the National Department of the Environment in Niger said, "250,000 square hectares (almost 980 square miles) of the Sahel are being turned into desert each year. For farmers and townspeople to collect firewood for cooking, they used to find dead wood readily available. Now they must travel as far as 125 miles at a time to cut trees and shrubs." The problem continues to worsen.

Though it is fascinating to learn that natural forces created the Sahara Desert 4,000 years ago, it is upsetting to know that the man is continuing the desertification process today. If the land cannot be replanted and reclaimed, the Sahara will soon be much larger than it already is.

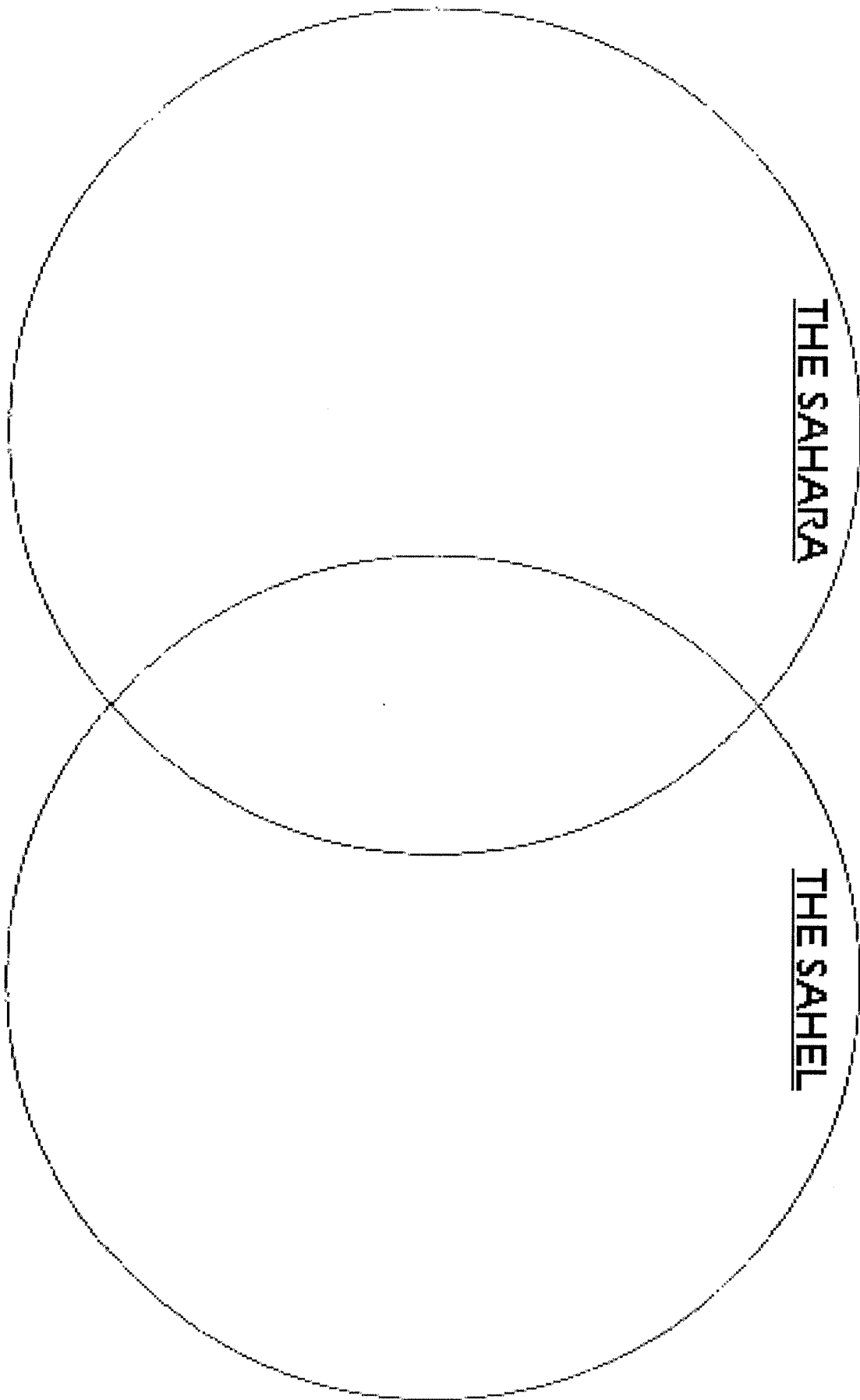


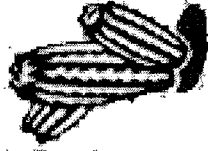
# DOUBLE DESERTS?



THE SAHARA

THE SAHEL





# DOUBLE DESERTS?

## Answers & Explanations

