

Contents

Unit 1	How Does Photosynthesis Work?	1
	Reading One Photosynthesis	4
	Reading Two US Faces Worst Drought in 56 Years	9
Unit 2	Can We Live Without Soil?	12
	Reading One Soil	15
	Reading Two Ways to Protect Water Quality	21
Unit 3	What Is Biological Control?	24
	Reading One Biological Control	27
	Reading Two Plant Fungicides Might Harm Honeybees	33
Unit 4	How Much Do You Know about Plant diseases?	36
	Reading One Plant Diseases	39
	Reading Two Is Watering Important to Plant?	44
Unit 5	How to Choose the Right Colors for Your Flower Arrangements?	48
	Reading One	
	Choosing the Right Colors for Your Arrangements	51
	Reading Two	
	Flower Power: Some Dazzling Floral Arrangements	56
Unit 6	Do you Know the History of Flowers?	60
	Reading One The History of Lavender	63
	Reading Two A Flower in Winter: The Story of the Poinsettia	69

Unit 7	May Vegetables Keep Brains Young?	71
	Reading One Vegetables May Keep Brains Young	74
	Reading Two Irrigation Pioneer Wins World Food Prize.....	80
Unit 8	Is Climate an Important Factor in Fruit Growing?	84
	Reading One Climate and Fruit Growing.....	87
	Reading Two Growing Blueberries	92
	Glossary	95
	Answers and Scripts	113
	Reference	169

Unit 1

How Does Photosynthesis Work?

Focus on the Topic



- ◆ Search the library or the internet for information about the process of plant growth.
- ◆ Discuss the necessary conditions for plant growth.
- ◆ Discuss the process of photosynthesis which you have learned.
- ◆ Write a group report and prepare for an in-class presentation.

Vocabulary Study

1. Read the sentences. Then circle the definition of the boldfaced words.

- (1) The clouds **indicate** the coming of rain.

Indicate means _____ .

- a. be a signal for or a symptom of
- b. express someone's idea

- (2) Let me **illustrate** the point with some very simple graphs.

When you illustrate something, you _____ .

- a. explain it by giving an example
- b. do it with other methods

- (3) Why **restrict** your activity to the classroom?

When you restrict something, you _____ it.

- a. give suggestions to
- b. place limits on

- (4) Then we could **dip** the cloth in any color we wanted.

When you dip something, you _____ .

- a. put into a liquid
- b. fix together

- (5) Our rescue team works hard to save them by **translocating** to another area.

When something translocates, it _____ .

- a. lends a hand to
- b. moves from one place to another

- (6) Plants take in carbon dioxide and release oxygen using light as energy during **photosynthesis**.

Photosynthesis is the way that _____ .

- a. green plants make their food using sunlight

- b. green plants make food for animals
- (7) An example will **demonstrate** how these objects work together.
When you demonstrate something, you _____ .
- provide evidence for it
 - explain it
- (8) Do not **expose** it to the sun.
Expose means _____ .
- cover something
 - without cover
- (9) When I drink a lot of **alcohol** I become a funnier person.
Drinking alcohol means drinking _____ .
- water
 - beer, wine, or whisky
- (10) Both salt and sugar **dissolve** easily in water.
When salt is dissolving in water, it _____ .
- becomes mixed with water and disappears
 - becomes obvious

2. Match the words in the left column with their definitions in the right column.

(1) photosynthesis	a. 限制
(2) dip	b. 证明; 论证
(3) restrict	c. 光合作用
(4) indicate	d. 改变……的位置
(5) illustrate	e. 浸; 泡
(6) demonstrate	f. 酒精
(7) alcohol	g. 阐明
(8) dissolve	h. 预示
(9) translocate	i. 溶解; 分解
(10) expose to	j. 暴露于

Reading One

Photosynthesis

The **synthesis** of **carbohydrate** (碳水化合物) is usually referred to **photosynthesis** or **carbon assimilation** (碳同化). It occurs in all green plants in sunlight^[1], which can be reduced by the action of sunlight on green plants. In most plants, the completion of this process is **indicated** by the appearance of **starch** in the leaf-cells, though a few species never synthesize starch. It is likely to produce sugar first, such as **glucose** (葡萄糖), but this cannot be stored.

It has been generally recognized that the synthesis of carbohydrate depends on the presence of light, the green substance **chlorophyll** (叶绿素), supply of **carbon dioxide** and water^[2], together with other factors that probably affect the rate of synthesis but do not actually control it.

A number of simple experiments can show how the factors mentioned affect the photosynthesis, and for this purpose plants with fairly large and thin leaves, such as **Nasturtium** (旱金莲) or **pelargonium** (天竺葵属植物), are very convenient. It must be remembered that when experiments are carried out to **illustrate** certain aspects of a process, it is necessary to put up control experiments as far as possible, while the specific factors under consideration are not **restricted**^[3].

In the simple photosynthetic experiments, the presence of starch in the leaves is taken as the **criterion** that carbon assimilation has taken place, and it is the method that should be **demonstrated** the presence of starch at first^[4]. Take a leaf from the plant and **dip** in the boiling water to kill it (stop any further changes, which makes the **removal** of the chlorophyll easier); then put the leaf into the 90% warm **ethyl alcohol** (乙醇) which **dissolves** the chlorophyll; Wash it in the water and then place it into the **dilute iodine** (碘酒). If starch is present, the leaf turns black; and if a **portion** of the leaf is examined, the starch grains can be seen under the **microscope**.

During the experiments, several plants are put in complete darkness for twenty-four hours, after that the sample leaves are tested to see whether any starch will be absent. It may be said right away that starch will be absent, because it has been **translocated** from the leaf (after conversion to glucose) during the dark period.

To demonstrate the necessity for light, one plant is exposed to normal daylight, **preferably** sunlight, for two or three hours, while a **corresponding** plant is put back into the dark, another way is available, that is a leaf can be covered with a mask of black paper in which a design can be cut as a stencil so that light can reach that part of the leaf^[5]. After exposure to light, the experimental leaf (or a leaf from the exposed plant and one from the plant kept in the dark) is tested for starch by the method described, and it is found that the light starch has disappeared. In the case of the part of the covered leaf will appear colorless, while another part under the **stenciled** pattern will be dark because of the starch. (501 words)

Notes:

1. The synthesis of carbohydrate is usually referred to photosynthesis or carbon assimilation. It occurs in all green plants in sunlight.
碳水化合物的合成通常是指光合作用或同化作用。所有绿色植物在阳光照射下都发生这种作用。
refer to 指的是; occur 发生
2. It has been generally recognized that the synthesis of carbohydrate depends on the presence of light, the green substance chlorophyll, supply of carbon dioxide and water.
一般认为, 碳水化合物的合成依赖于光、绿色物质叶绿素、二氧化碳和水。
depend on 依赖于, 依靠
3. It must be remembered that when experiments are carried out to illustrate certain aspects of a process, it is necessary to put up control experiments as far as possible, while the specific factors under consideration are not restricted.
要记住, 当通过实验来对这一过程的某些方面进行说明时, 要尽可能进行对照实验, 而所考虑的特殊因素并不受到限制。
control experiment 对照实验
4. In the simple photosynthetic experiments, the presence of starch in the leaves is taken as the criterion that carbon assimilation has taken place, and it is the method that should be demonstrated the presence of starch at first.
在简易的光合作用实验中, 叶片中淀粉的存在被看做是发生碳同化作用的判断标准, 所以首先需要的是证明淀粉存在的方法。
take as 把……看做是……; take place 发生

5. ... while a corresponding plant is put back into the dark, another way is available, that is a leaf can be covered with a mask of black paper in which a design can be cut as a stencil so that light can reach that part of the leaf.

或者用另一种办法，可以把一片叶子用一张黑纸盖起来，在纸上剪出一个图案作为模板，使光能照射到那部分叶片。

► Read for Main Ideas

Choose the best answers to complete each sentence.

1. In most plants, photosynthesis is indicated by _____ .
 - a. the change of the leaves' color
 - b. the appearance of starch in the leaf-cells
 - c. the fruits
 - d. the seeds
2. The synthesis of carbohydrate depends on the presence of _____ .
 - a. air and water
 - b. light and the green substance chlorophyll
 - c. light, the green substance chlorophyll, carbon dioxide and water
 - d. carbon dioxide and water

► Read for Details

Complete the sentences with the following words or phrases. Change word forms if necessary.

alcohol	photosynthesis	expose to	dip	restrict
demonstrate	illustrate	dissolve	indicate	translocate

1. Drivers must keep from _____ for safe driving.
2. _____ the sugar in the coffee by stirring it.
3. Medicine mustn't kept _____ direct sunshine, or it will go bad.
4. How can I _____ to you that my story is true?
5. The army _____ the victims to higher places to keep away from the flood.
6. Why _____ the exercises to only two key words per sentence?

7. _____ each apple in the jam until thickly coated.
8. You have no way to _____ whether this method is effective.
9. Through _____ plants use the power of sunlight to convert water and carbon dioxide into sugar.
10. She decides to use pictures to _____ her point of view.

Complete the following sentences with words from Reading One.

1. The synthesis of carbohydrate occurs in all green plants in _____ .
2. Plants with fairly _____ leaves are very convenient to do the experiment.
3. The presence of _____ in the leaves is taken as the criterion that carbon assimilation has taken place.
4. Take a leaf from the plant and dip in the _____ water to kill it.
5. During the experiments, several plants are put in complete darkness for _____ hours.
6. Starch will be _____ , because it has been translocated from the leaf during the dark period.

Work with a partner. Read each sentence. Write T (true) or F (false). Then share your answers with the class.

- _____ 1. In all plants the completion of this process is indicated by the appearance of starch in the leaf-cells.
- _____ 2. Some other factors can probably affect the rate of synthesis but do not actually control it.
- _____ 3. Plants with fairly large and thin leaves are very convenient to do simple experiments.
- _____ 4. Starch will translocate from the leaf during the twenty-four hours dark period.
- _____ 5. In this experiment, the leaf will not change the color whether there is a mask covered on it.
- _____ 6. It is necessary to put up control experiments as far as possible, while the specific factors under consideration are not restricted.
- _____ 7. During the experiment, put the leaf into the 80% warm ethyl alcohol.
- _____ 8. The last step of the experiment is putting the leaves into the dilute iodine.

- _____ 9. If a portion of the leaf is examined, the starch grains can be seen under the microscope.
- _____ 10. After exposure to light, the experimental leaf is tested for starch.

► Express Opinions

How to carry out a simple experiment to demonstrate how does photosynthesis work? Please tell the steps.

Step 1. Cover a leaf with a mask of black paper.

Step 2. Expose the plant to the sunlight for two or three hours.

Step 3. Dip the leaf in warm 90% ethyl alcohol.

Step 4. _____

Step 5. _____

Step 6. _____

Task-driven Practice

Task 1 *Listen to the four conversations, and choose the best answer to each of the questions you hear.*

- | | | |
|-----------------------------|--------------------------|--------------------------|
| 1. A. Carrot. | B. Ice cream. | C. Vitamin. |
| 2. A. One. | B. Two. | C. Three. |
| 3. A. On the grand. | B. On a ladder. | C. In the water. |
| 4. A. From 7 a.m. to 9 a.m. | B. From 6 p.m. to 9 p.m. | C. From 7 p.m. to 9 p.m. |

Task 2 *Listen to the short passage and fill in the blanks with what you hear.*

Today, the economic existence of many (1) _____ is being threatened by the modern global agricultural economy. To offset the loss of (2) _____ farm income, many farms are (3) _____ their unique nostalgic, rural and outdoor appeal by developing entertainment (4) _____ as additional sources of income, typically referred to as “agritainment”. These option (5) _____ such strategies as pick-your-own, petting zoos, corn mazes, and farm stores and restaurants. One of the most successful independent entertainment destinations in the United States, Knott’s Berry Farm, started as a traditional pick-your-own berry farm.

Task 3 *Listen to the dialogue and mark the statements with T (true) or F (false).*

- _____ 1. People come to pick apples by themselves and take home for fun.
- _____ 2. Green Food refers to the plants grown without using any chemicals, fertilizers, and pesticides.
- _____ 3. Farmers use pesticides to kill pests.
- _____ 4. Jack's father asked him to knock down the small apples on the ground.
- _____ 5. Farmers can make small apples into apple-pie.

Task 4 *Listen to the passage and match the correct agritainment tourist attraction to each description.*

- 1. It is considered one of North American's most successful Halloween agritainment attractions. ()
- 2. It was established in 1813, which is the result of 6 generations of family dedication. ()
- 3. Once it was said to have the largest quince orchard in the world. ()
- 4. It is a popular destination for school field trips and families for its hayrides to its wide variety of u-pick-it produce fields. ()

Note:

Knott's Berry Farm is a theme park in California, owned by Cedar Fair Entertainment Company. It is also a line of jams, jellies, preserves, and other special food. Knott's is the most visited park in the Cedar Fair chain with 3.654 million visitors in 2011.

Reading Two

US Faces Worst Drought in 56 Years

The United States is suffering its worst **drought** in almost sixty years. **Moderate** to extreme dry conditions spread to 50% of the country in June. That was the most since December of 1956. The National **Climatic** Data Center also says high temperatures in June became the warmest twelve-month period on record. Recordkeeping began in 1895.

The drought map showed that conditions in June improved in the Southeast than May. But they strengthen from the Midwest to the **Great Plains** (大平原) and much of the West. Predictions through the end of October suggest that, the drought is likely to improve in areas of the Southwest and Southeast. But the drought is expected to continue or strengthen in large parts of the country. Most of the affected states are in the southern half of the country. But officials said farmlands in the north are now drying up as well.

Last week, **Agriculture Secretary** (农业部长) Tom Vilsack met with President Obama. Mr. Vilsack says the drought has severely affected corn and soybean crops. The United States is the world's leading producer of corn and soybeans. Mr. Vilsack said the overall effect of the drought is hard to predict. Some areas are getting rain, and **drought-resistant** seeds have helped crops grow well in some areas.

President Obama has cut the interest rate on **disaster loans** (灾害贷款) for farmers, and made it easier for affected areas to receive government financial assistance. At the same time, farmers are waiting to see what **Congress** (国会) does with the farm bill, a major piece of **legislation** renewed every five years. The **Senate** (参议院) has passed a **version** that would end direct payments to farmers but help pay for crop insurance. The plan would save money. But the **House of Representative** (众议院) has passed different legislation, and Congress needs to reach a **compromise**. The current farm bill ends at the end of September. (315 words)

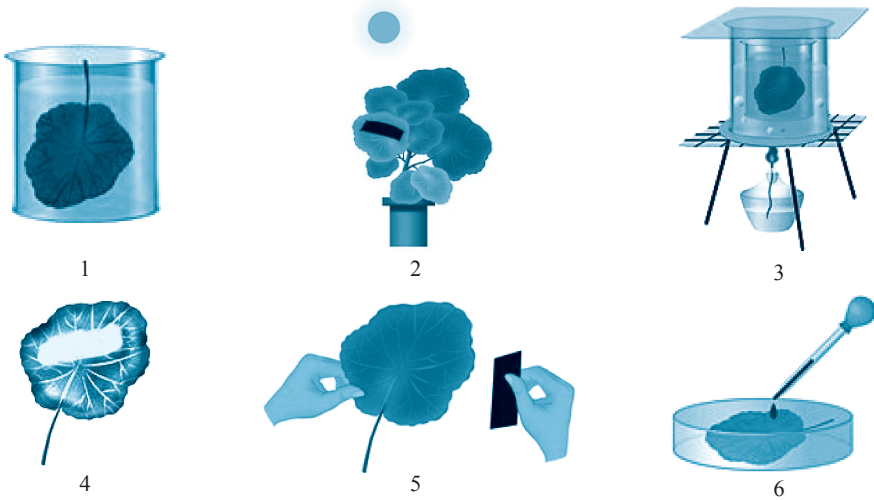
Writing

Work in pairs. Find the supporting details for the following ideas from Reading Two.

Ideas	Details
The drought is quite serious	
The content of the drought map	
Tom Vilsack's words about the drought	
President Obama's policy against the drought	

Do It Yourself (D.I.Y.)

The following pictures are about the simple photosynthetic experiment. Put them in the correct order, and then describe how to operate this experiment.



Achievement Test

After learning this unit, you are required to finish the test in supplementary material.