Biology Grade 7

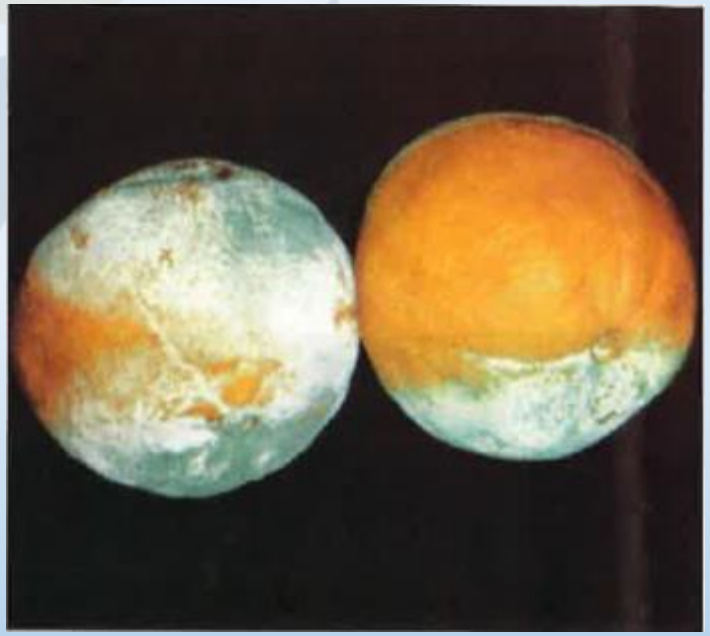
Chapter 2: Nutritive needs of chlorophyllic plants

Activity 4: Nutritive Needs of Fungi

INSTRUCTOR: SUHAIB AUDI

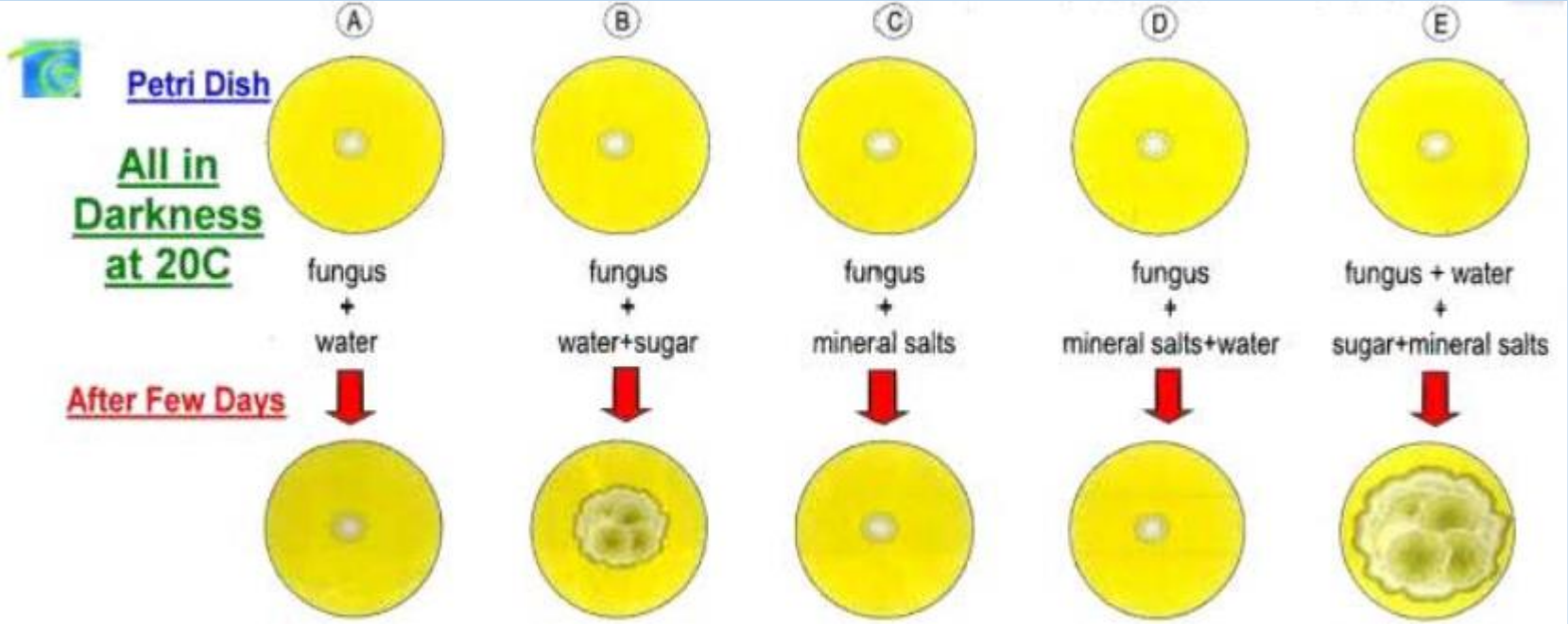
❖ Introduction:

- Fungi, non-chlorophyllic organisms, grow on decomposing plant and animal matter, are not capable of manufacturing their organic matter from inorganic substances.
- How do they obtain their nutrition?
- What are their nutritive needs?



Fungi appear in the form of ramifying filaments constituting mycelia of various colors, black and brown on a piece of bread , white and green on an orange .

❖ Nutritive Needs of Fungi



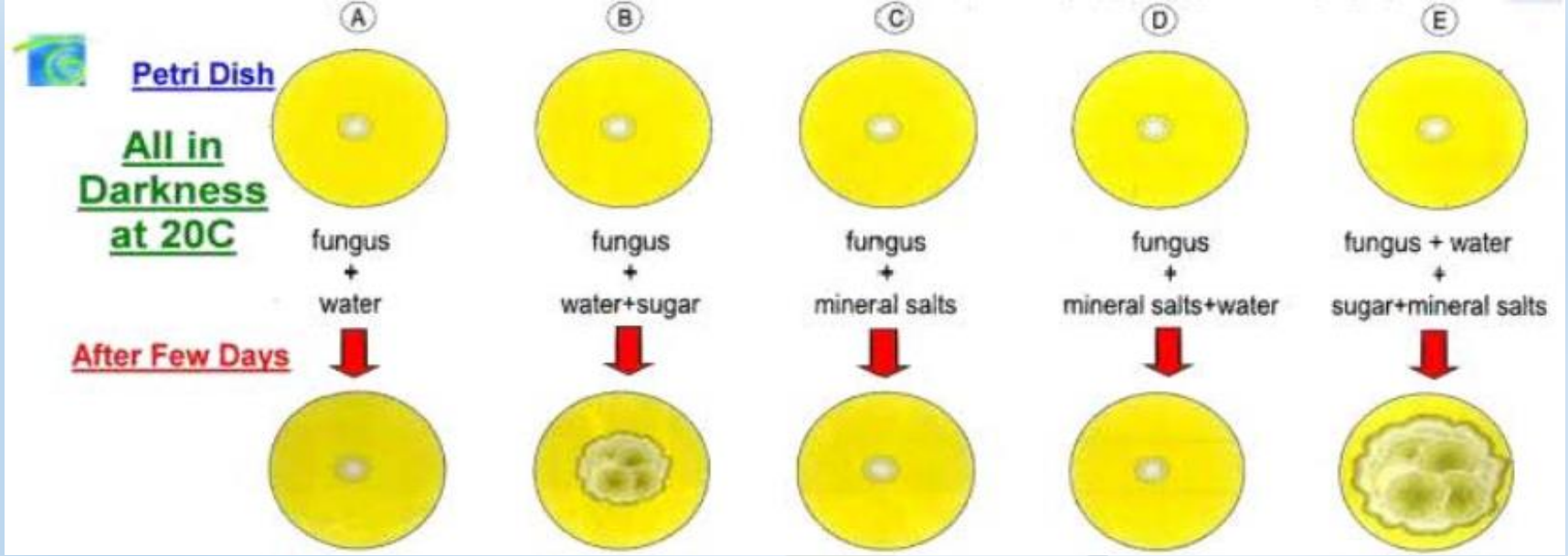
Experimental study of the nutritive needs of the white bread fungus. The experiments are carried out in closed Petri dishes, in darkness and at a temperature of 20°C.

1. Pose the problem at the origin of this experiment.

What are the nutritive needs of the white bread fungus?

2. Pick out the two physical factors that are necessary for the development of white fungus

- Darkness
- A temperature of 20 ℃

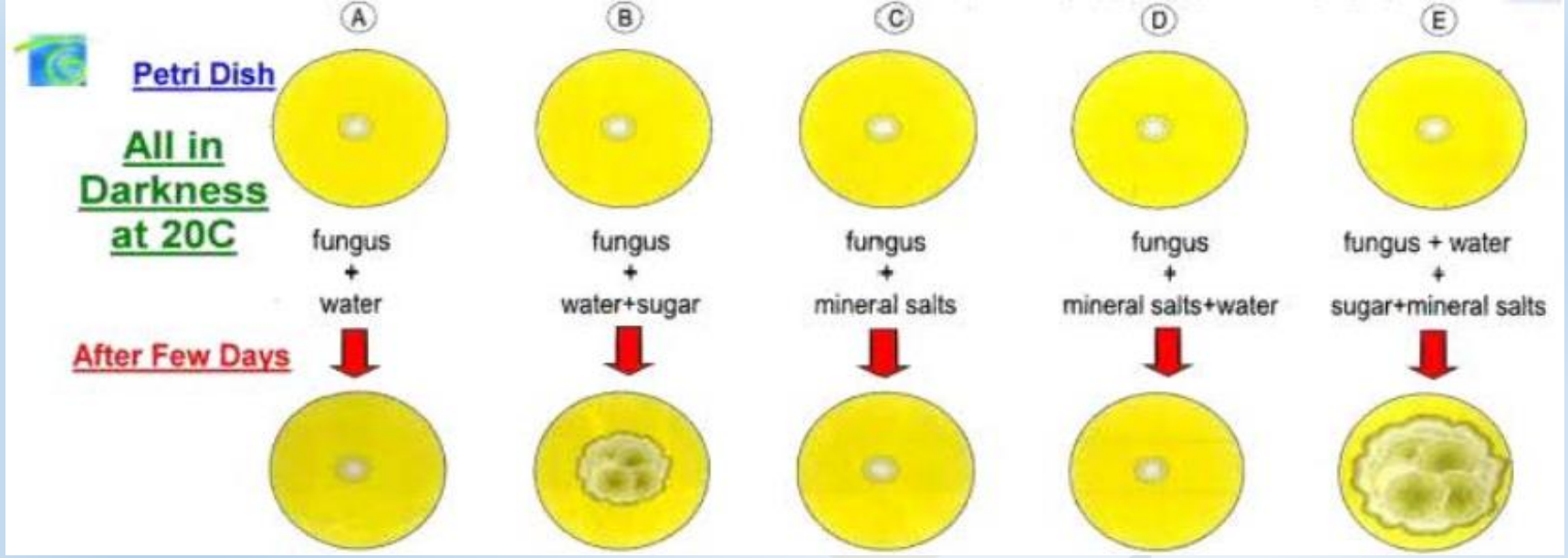


3. Draw a table showing the different experimental conditions.

Petri dish / Conditions	A	B	C	D	E
Fungus	+	+	+	+	+
Water	+	+	_	+	+
Sugar	_	+	_	_	+
Mineral salts	_	_	+	+	+
Humidity	+	+	+	+	+
Darkness	+	+	+	+	+
Temperature 20 ℃	+	+	+	+	+

Keys:
(+): presence
(-): absence

Title: A table showing the different experimental conditions.



4. Indicate the role of the petri dish A.

It is the control petri dish.

5. Analyze the results of the experiments.

The fungus doesn't grow in any of the petri dishes **A**,**C** and **D** containing respectively **water**, **mineral salts** and **water + mineral salts** placed in **darkness at temperature of 20 ℃** , while the **fungus grows better in the petri dish B containing water + sugar** and **grow more in the petri dish E containing water + mineral salts + sugar placed at the same physical conditions as the other petri-dishes.**

6. Draw out the nutritive needs of fungus

The nutritive needs of fungus are sugar, water and mineral salts.

❖ Fungus and factors of the medium

1. The optimum temperature for the development of fungus

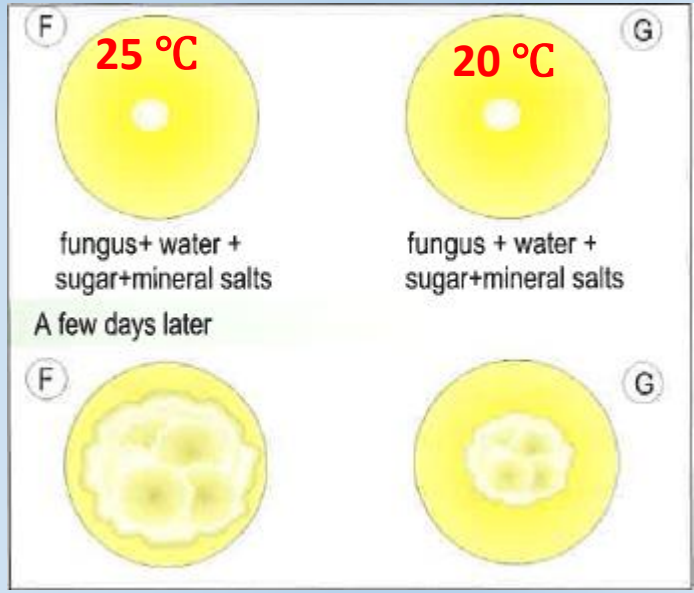
- Fungi develop in the presence of organic matter & mineral salts. We wonder about the optimum temperature for their development. For this reason, we conduct two experiments.

1. Indicate the posed problem.

What is the optimum temperature for the development of fungus?

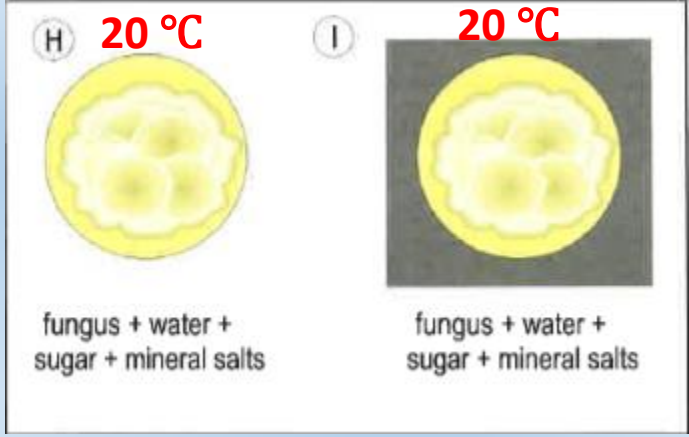
2. Is the problem solved? Justify.

Yes, since the development of fungus in dish F, at 25°C, **is better than** that in dish G at 20°C, so the suitable temperature for the growth of fungi is 25°C.



2. The importance of light on the development of fungus

Many experiments are done to reveal the importance of light on development of fungi as schematized in the adjacent figure:



1. Pose the problem at the origin of this experiment.

Does light have an effect on the development of fungus?

2. Draw a table showing the different experimental conditions.

Petri dish / Conditions	H	I
Fungus	+	+
Water	+	+
Sugar	+	+
Mineral salt	+	+
Light	+	–
Temperature 20 °C	20 °C	20 °C

Variable factor

Keys:
(+): presence
(-): absence

Title: A table showing the experimental conditions.

3. Formulate the tested hypothesis.

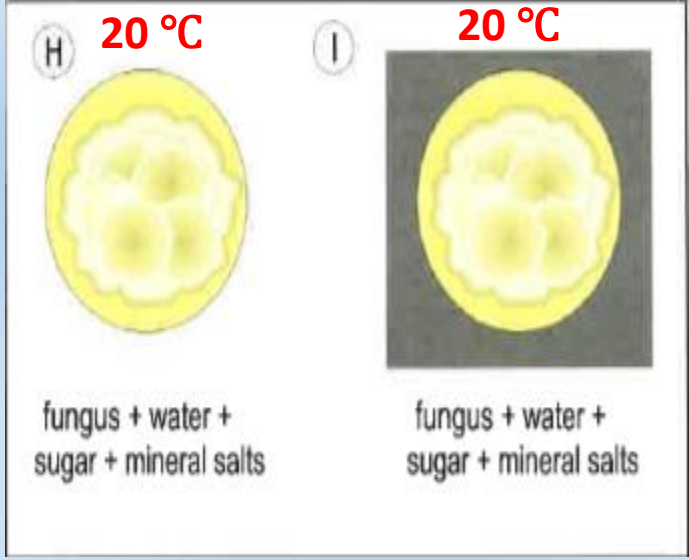
Hypothesis: Light has no effect on the development of fungus.

4. Is the hypothesis valid? Justify your answer.

Yes, it is valid because both fungi, whether placed in the presence or absence of light, **developed in the same way** in Petri dishes under **the same conditions**: water, sugar, mineral salts, and a constant temperature of 20 °C.

5. What can you conclude?

We can conclude that light is not important for the development of fungus.



Be Smart ACADEMY

Further measurements are done to study the variation of the duration of white bread fungus development as a function of temperature.

Temperature (°C)	9	15	25	35
Duration of fungus development in days	9	4	2	5

Scale: 1 day, 5°C

1- Pick out the variable factor.

Temperature.

2- Convert the obtained results into a graph.

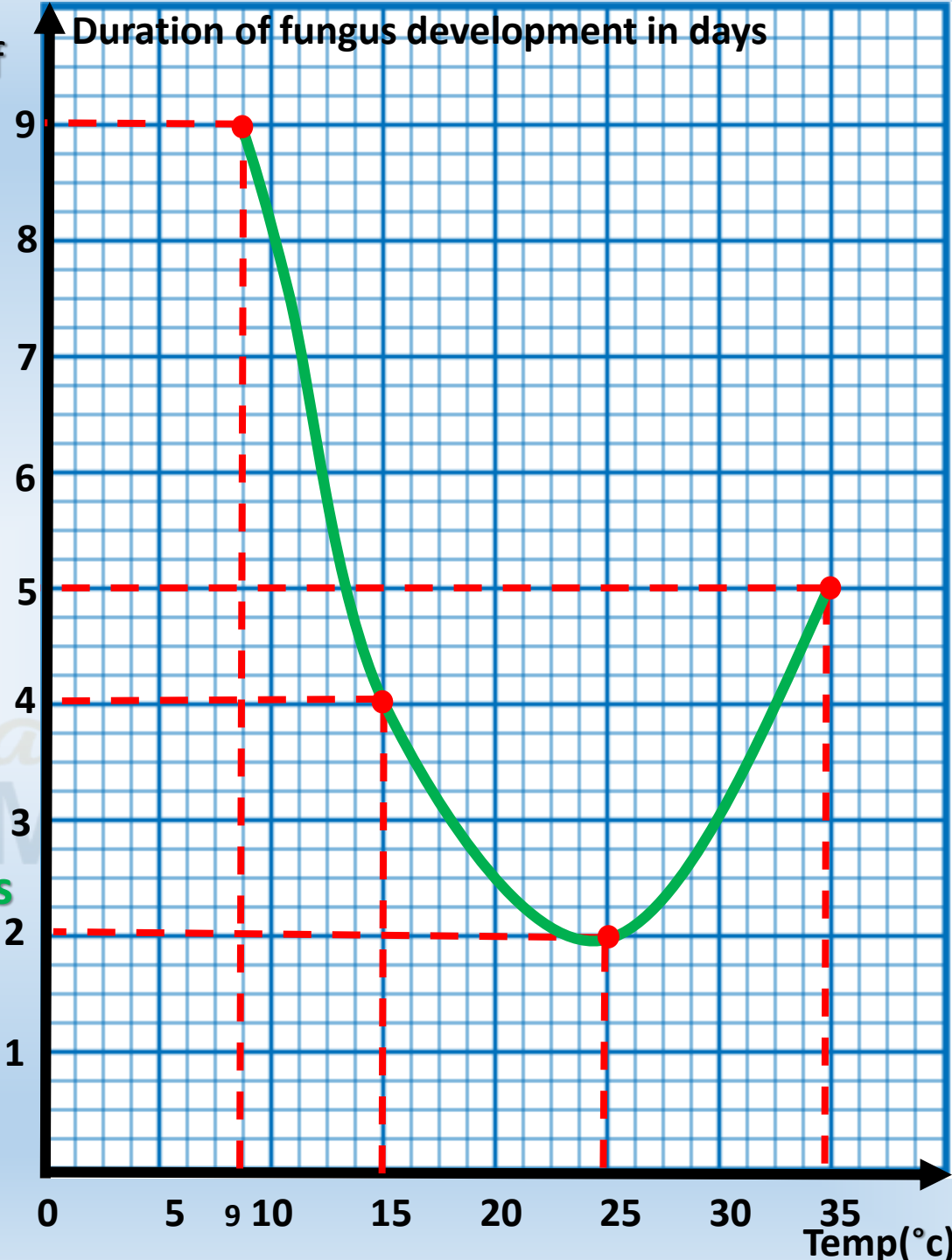
Title : A graph showing the variation of the duration of fungus development in days as a function the temperature (°C).

3- Analyze the obtained result.

As the temp. increases from 9 to 25 °C, the duration of fungus development decreases from 9 to 2 days, then as the temp. increases from 25 to 35°C, this duration increases from 2 to 5 days.

4- What can you conclude?

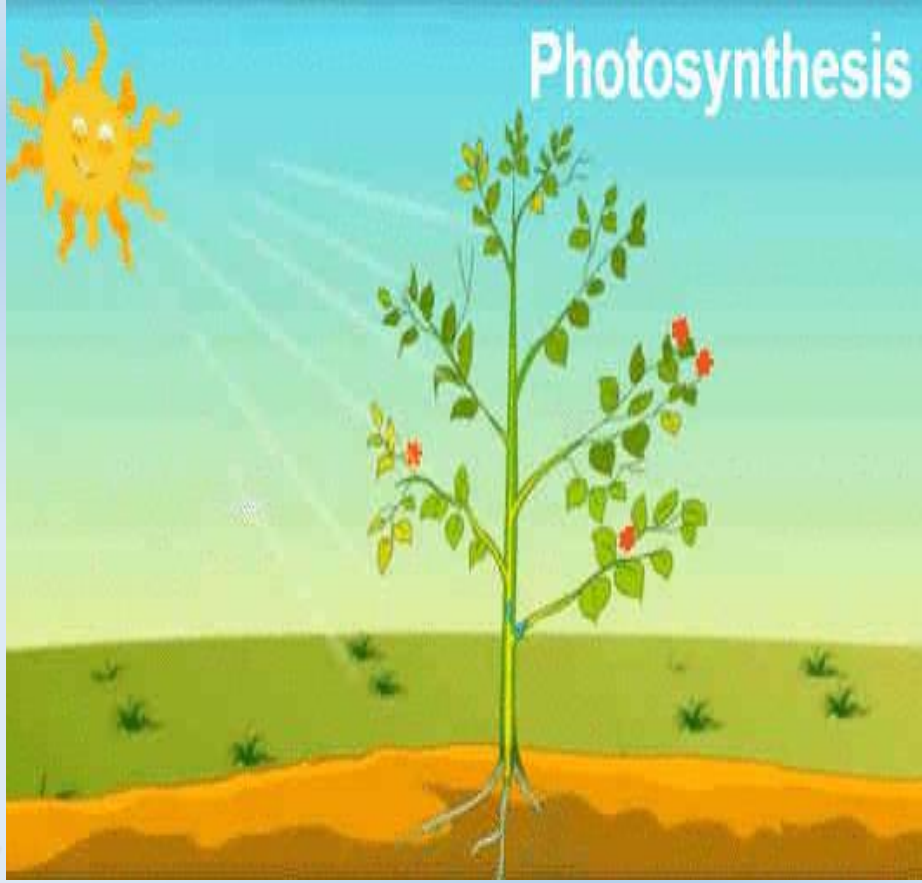
We conclude that fungus needs moderate temperature to grow.



❀ Summary – Nutritive Needs of Plants

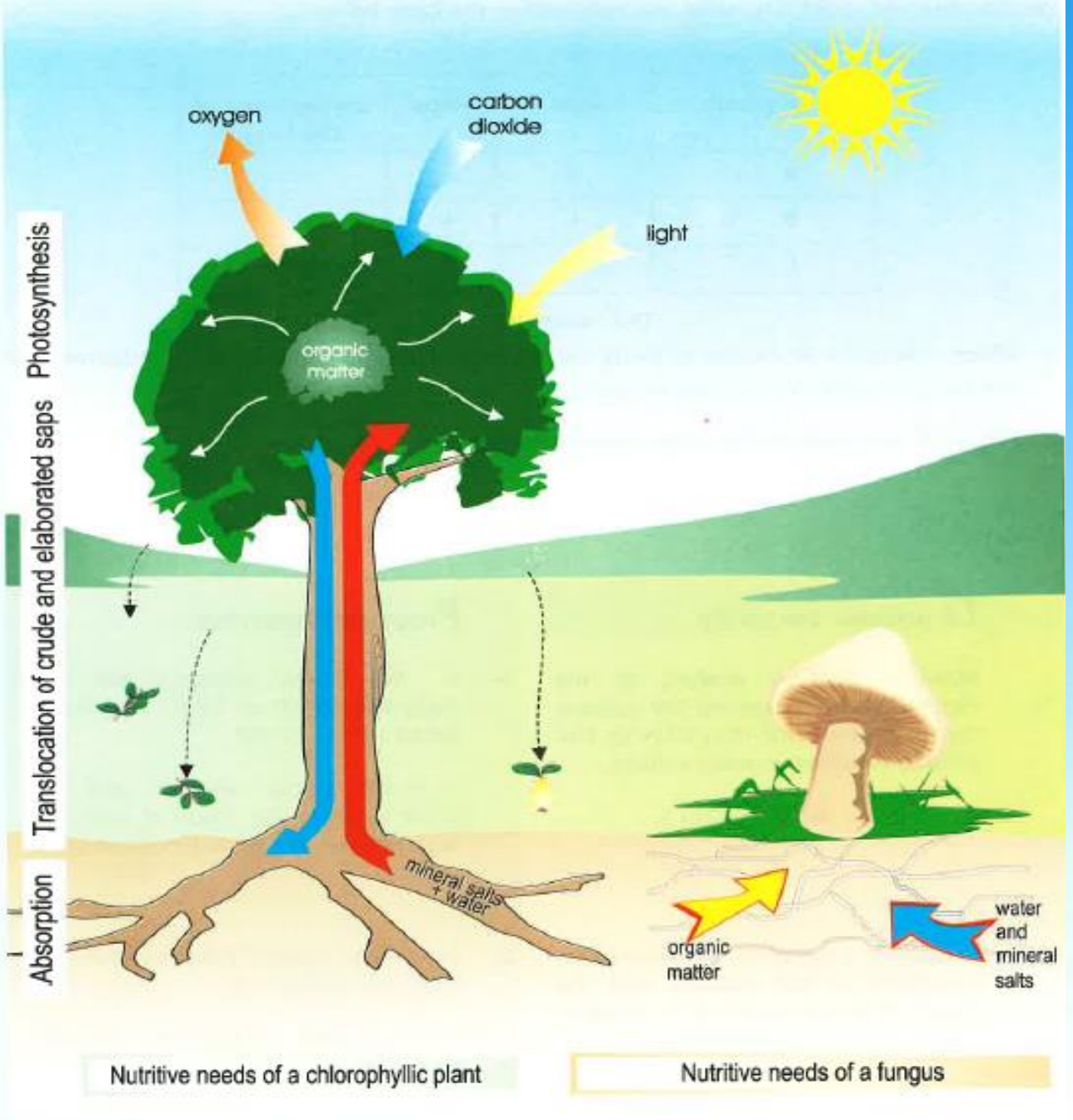
❑ Chlorophyllic Plants: The Green Producers

- Need: **Water, mineral salts, carbon dioxide, and light** to grow.
- Absorb water & minerals through **root hairs** → form **crude sap.**
- **Crude sap travels** from roots to leaves through **conducting vessels.**
- Use **photosynthesis** to make organic matter from inorganic substances.
- During photosynthesis: **Carbon dioxide in, oxygen out.**
- Produce **elaborated sap** (organic matter + water) → flows from leaves to roots.
- Store extra organic matter in **fruits, tubers, and storage organs.**



❑ Non-Chlorophyllic Plants: The Dependent Feeders.

- **Cannot do photosynthesis** (no chlorophyll).
- Absorb **mineral & organic substances** from surroundings.
- Use **mycelia** to draw nutrients made by **other living organisms.**



Nutritive needs of plants