

LECTURE MAKER

STIMULI AND RESPONSE IN PLANTS

SBP 0024
TECHNOLOGY AND INNOVATION IN TEACHING AND LEARNING BIOLOGY

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START

Learning objectives:

What will we learn?

In this unit, we are going to learn about the responses of plants to different stimuli. At the end of this unit you should be able to answer the following questions:

1. State the stimuli that cause the response in plants.
2. Identify the parts of plants sensitive to specific stimuli.
3. Relate the response in plants to their survival.

What is stimuli in plant?

STIMULI AND RESPONSE IN PLANTS

1. Plants, like other living things, can also react to changes in their surroundings. Unlike animals, plants often react slowly to stimuli.
2. The movement of plants are effected by external stimuli such as :
 - light
 - gravity
 - water and
 - touch
3. Most plants respond to a stimuli by growing towards or away from it. This respond is called tropism.

What is positive and negative tropism?

Positive tropism and negative tropism

Tropisms are named according to the nature of stimuli.

Tropism is divided into positive tropism and negative tropism

Who am I? Just click on me

I love the light!

Why plants need tropism?

Positive tropism and negative tropism

Positive tropism is movement or growth of plants towards stimulus.

Negative tropism is movement or growth of plants away from stimulus.

Why do you think plants need tropism?

Tropism help plants to survive because they help plants to obtain their needs such as light and water.

How many types of tropisms?

Types of Tropisms

There are 5 types of tropisms which are

1 : Click Here: **phototropism**

2 : Click Here: **geotropism**

3 : Click Here: **thigmotropism**

4 : Click Here: **nastic movement**

5 : Click Here:

What is phototropism?

PHOTOTROPISM

1. Phototropism is
2. Plants shoots always grow towards light.
3. They show positive phototropism.



Based on the diagram, which part of plant grow towards the light?

You can click on the necessary part on the diagram.

Where should Shoot go?

Phototropism

Study the video above

Presentation - Tugboat

HYDROTROPISM

Study the diagram below. What can you say about the direction of the root and shoot of the plant?

ANSWER:

ROOT 1. The root grows towards the water sources.

SHOOT

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Presentation - Tugboat

What is hydrotropism

HYDROTROPISM

- Hydrotropism is the response of plants to water.
- Parts of plants that shows positive hydrotropism is the roots.
- Roots will shows positive hydrotropism by moving towards water.
- Shoots show negative hydrotropism.

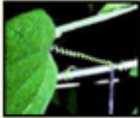
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What is thigmotropism?

THIGMOTROPISM

Thigmotropism is the response of plants when they are in contact with a solid.



The stems of the plants twine round the solid to climb.



Click here for the definition

The stems and tendrils are said to be positive thigmotropism.

What is nastic movement?

NASTIC MOVEMENT

Nastic movement is the movement of plants to a stimulus such as touch or darkness.



Unlike tropism, nastic movement is **not** related to the direction of the stimulus.

NASTIC MOVEMENT

Before touch

The **leaves** of a mimosa plant instantly close and droop when touched.

After touched

Why nastic movement?
(Click for the answer)

NASTIC MOVEMENT



The **leaves** of a mimosa plant instantly close and droop when touched.



Why nastic movement?
(Click for the answer)

This nastic movement of the mimosa plant acts as a defence.

1. Which of the following responses indicates tropism?

- ☐ ① Green leaves turn towards sunlight
- ☐ ② The leaves of a Mimosa plant close when touched
- ☒ ③ Banana leaves roll up on a hot day
- ☐ ④ Leaves wither if they do not get enough water



To get support
To get water
To get mineral salts

2. Which response below helps a plant carry out the above functions?

- ☐ ① Positive phototropism
- ☒ ② Negative hydrotropism
- ☐ ③ Negative thigmotropism
- ☐ ④ Positive geotropism




3. Which plants parts are correctly matched with their responses to external stimuli?

- I Roots – positively hydrotropic
- II Leaves – positively phototropic
- III Shoots – negatively geotropic

☐ ① I and II only

☐ ② I and III only

☐ ③ II and III only

☐ ④ I II and III



4. The ability of the roots of a plant to search for water source is helped by

Positive hydrotropism of the roots

Correct



