

BIO 101 SUMMARY ① IBN IARLS

* The plants that complete their life cycle within a week are called EPHEMERALS

* Ephemerals always found in desert areas.

* The plants that complete their life cycle within a year are called Annuals

* While those within two years are called Biennial plants

* The ones that complete their life cycle in several years are called perennials

* Shaded plants tend to grow tall with low biomass indicating that the height is not necessary an index of growth.

* Growth is affected by the availability of NUTRIENTS

* Movement in plants is generally slow and the direction of stimulus may determine.

* Most annual and Biennial plants are capable of producing flowers when external and internal conditions are made.

* When plants received internal and external factors the flower are produced only when a minimum age is obtained.

* A Leaf area can be measured using a leaf area metre (LAM)

* The area covered by the leaf is calculated as the area of the leaf.

* Increase in size is associated by the increase in number of the leaves.

* The product of metabolism origin and that of excess photosynthesis is GROWTH

* When ~~plants~~ begin to grow, they reach a certain stage called RIPENESS to flower.

* The internal conditions are normally HORMONES

* The external conditions are DAY LENGTH AND TEMPERATURE or photoperiodism

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* The uninterrupted day length required or the minimum daylength required to induce a flowering response is called PHOTO PERIODISM

* * plants that can only flower when the daylength is longer than a certain critical value is called

LONG DAY PLANT

* plants that will not flower until they receive a short day length are called

SHORT DAY PLANTS

* The plants that are day neutral (ie they can flower under both short & long day condition) are called

GARDEN PLANTS

* The enzyme that is responsible for the conversion of wood into lignin at the point of bolting on the stem is called

PHENYLKETOLAMONIALYSIS

* After the formation of flower the filament can continue to grow bearing vegetative leaves this is called

MONSTROUS DEVELOPMENT

BIO 101 Summary ③

Vernalin is produced from the stem in a very low temperature.

Generally a flowering hormone is called FLORIGENS.

A plant that is growing vegetatively without producing flowers is called

VERNALIZATION

The light period received by the leaves is called PHOTON.

Winter wheat grows during harmattan season mostly in Borno State.

Photosynthesis involving the fixation of Carbon dioxide occurs under two (2) conditions:

(i) The Carbon (4) path ways (4C) under the

TROPICAL SPECIES

(ii) The Carbon (3) path way (3C) under the

TEMPERATE SPECIES

There are two (2) Basic stages occur in both Carbon (3) (3C) and Carbon (4) (4C), viz:

- (i) The light stage.
- (ii) The dark stage.

The light involves

- Photophosphorylation
- Photolysis of water

BIO 101 SUMMARY (+)

The ~~complete~~ movement of plant by a complete withdrawal of particular in low plants is called

TAXISM

A Complete movement by an organ or protoplasm to chemical is called CHEMOTAXIS.

A Complete withdrawal from one point to another by bacteria is called

PHOTOTAXIS

A Complete movement from one point to another by touch is called

THIGMOTAXIS

Movement in plant is generally SLOW

There are two (2) movement types are identifiable in plants

(1) The one in which

the direction of stimulus determine the direction of response

(i) The second type is such that the direction of stimulus does not determine the direction of response.

The response that is directional is called

TROPHISM OR TROPIC MOVEMENT

The response that the direction of stimulus does not determine is called

NASTISM OR

NASTIC MOVEMENT

The three (3) stages of movement in plants are

1. perception - receiving light by leaves
2. Transduction - stimulus convert to indole acetic acid (IAA)
3. Response - bending of roots to the plane.

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The process of movement of leaves to shortest of light is called

NYCTINASTY

The response to the pressure of the leaves as a result of touch is called

THIGMONASTIC

The response positively to the dark shade of the parent plants fill they come contact with the stem of the parent plant the process called

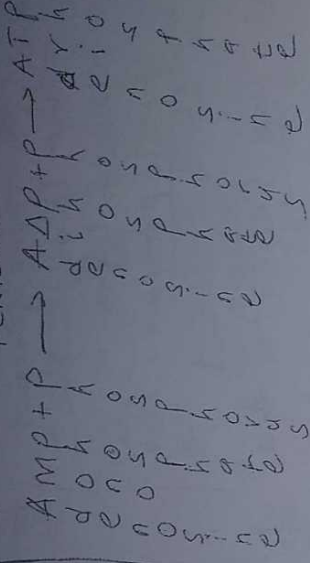
SCOTOTROPISM

About 420-720nm Chlorophyll absorbed

The photochemical splitting of water is called

PHOTOLYSIS

PHOTOSYNTHETICALLY ACTIVE RADIATION FERRODOXIN



The process whereby the energy ~~that is stored~~ from ~~photosynthesis~~ is responsible for the combination of Adenosine triphosphate and inorganic phosphate to form ADP with further combination to form ATP in form of chemical energy in the dark reaction is called

PHOTOPHOSPHORYLATION

The electrons that move back to chlorophyll again after the formation of ATP is known as

Cyclic phosphorylation

When the electrons do not move back to chlorophyll this process is called

Non-cyclic photophosphorylation

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* The first reaction that involves the use of light is PHOTOPHOSPHORYLATION

* The second is the photochemical splitting of water called PHOTOLYSIS

* The oxygen split and escapes into the ATMOSPHERE or is ABSORBED IN RESPIRATION

* Light cannot be used directly in the dark reaction but the products ATP and NADPH₂ are used.

* In dark reaction CO₂ is absorbed by Ribose diphosphate (RuBP) through the Stroma.

* The absorption of RDP forms an unstable compound called 6 KETO ACID

* The hydrogen reduces 6 keto acid forms 2 molecules of 3C atoms called PHOSPHOGLYCERIC ACID

* The reduced NADPH₂ is stored for subsequent utilization in the DARK REACTION

* Phosphoglyceric acid is a STABLE Compound

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* Plants that form phosphoglyceric compound as the first stable compound are called

CARBON 3 PLANTS

When NADPH reduces phosphoglyceric acid PHOSPHOGLYCERALDEHYDE is formed.

phosphoglyceraldehyde also forms DETHYDROXYACETONE PHOSPHATE.

* A combination of phosphoglyceraldehyde and dehydroxyacetone phosphate is form FRUCTOSE-

1-6-diphosphate.

* Glucose is finally formed by removal of fructose phosphate group to glucose.

* plants that form carbohydrates in this way are

TEMPERATE PLANTS

And they are the Carbon 3 plants.

* Carbon 4 plants:

• The first stable product is Carbon 4 compounds.

* Carbon dioxide is absorbed by PHENOL PYRUA

• To form OXALOACETIC ACID.

* Oxaloacetic acid is a stable compound

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Stable compound

called

CARBON 4 PLANTS

The removal of, carboxyl group in oxaloacetic acid and the released of energy will produce

MALIC ACID

CO_2 is absorbed

by chloroplast

in the bundle

sheath cells located

in the vascular

bundles of

Carbon 4 plants

After the formation of CO_2 and its

~~*~~ In Carbon 4 CO_2 fixation occurs twice

• In the MESOPHYLL

• In the BUNDLE SHEATH CELL

~~*~~ In Carbon 3 CO_2 fixation occurs Once

• In the MESOPHYLL Only

~~*~~ Carbon 4 plants are not easily LIGHT SATURATED even at full bright light

(ie photosynthesis keeps increasing)

~~*~~ Carbon 3 plants are light saturated (photosynthesis seizes at some points)

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Bio Bot Summary

* Carbon 4 plants have higher productivity than Carbon 3 plants. The fundamental difference between Carbon 3 & Carbon 4 plants.

Carbon 3	Carbon 4
<ul style="list-style-type: none"> • Light Separated - Not light separated • The first is the phosphoglyceric acid • Generally Temperate • Low productivity • Absent • Photorespiration is absent 	<ul style="list-style-type: none"> • is oxaloacetic • Tropical plants • High productivity • Photorespiration is present

TROPICAL PLANTS

Carbon 3 plants are

TEMPERATE PLANTS

FACTORS AFFECTING PHOTOSYNTHESIS

- Increase in CO_2
- Increase in H_2O
- Increase in Light
- Sometimes the edge of leaves determines photosynthesis.

Oil is an excreting products found in the barks of CITRUS SINENSIS

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Some acronyms in Biology

AMP = Adenosine Mono phosphate

ADP = Adenosine di phosphate

ATP = Adenosine tri phosphate

NADP = Nicotinamide Adenosine ~~triphosphate~~
dinucleotide phosphate

NADPH₂ = Nicotinamide adenosine
dinucleotide phosphate

RDp = Ribose diphosphate

PKA = phenyl Ketosaminoglycoside

PGA = phosphoglyceric acid

PEP = phosphoenol pyruvate

OAA = Oxaloacetic acid

AA = Indoleacetic acid

DAP = Dehydroxy acetone
phosphate