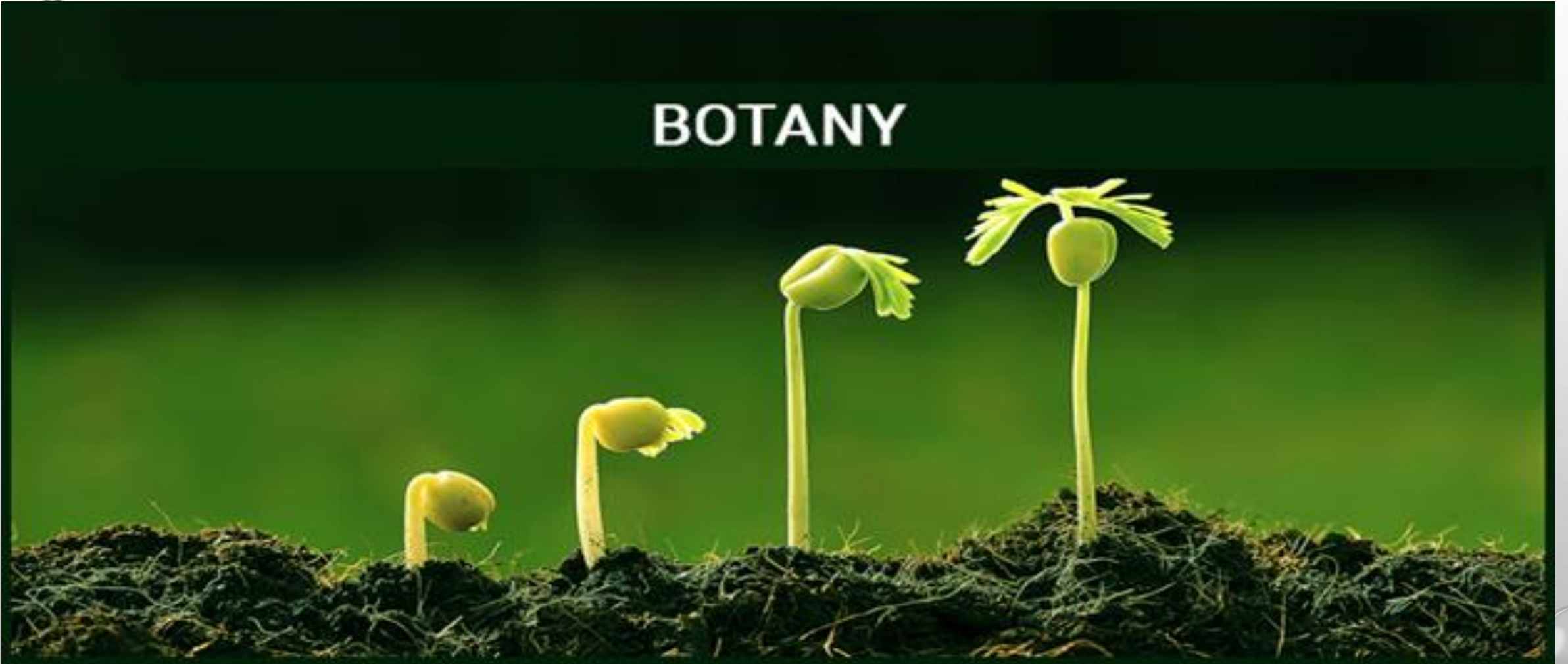


SAFALTA CLASSTM

An Initiative by **अमरउजाला**

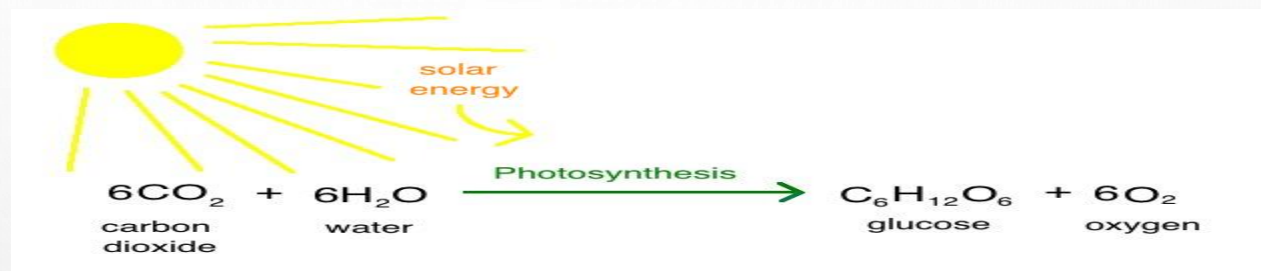
Study of Plants Theophrastus

BOTANY



1. PHOTOSYNTHESIS:

Photosynthesis, the process by which green plants and certain other organisms transform light energy into chemical energy.



Wavelength needed for photosynthesis: Visible light (4000-7000)Angstrom.

Max Rate: Red/ Blue Color

Min Rate: Green Color

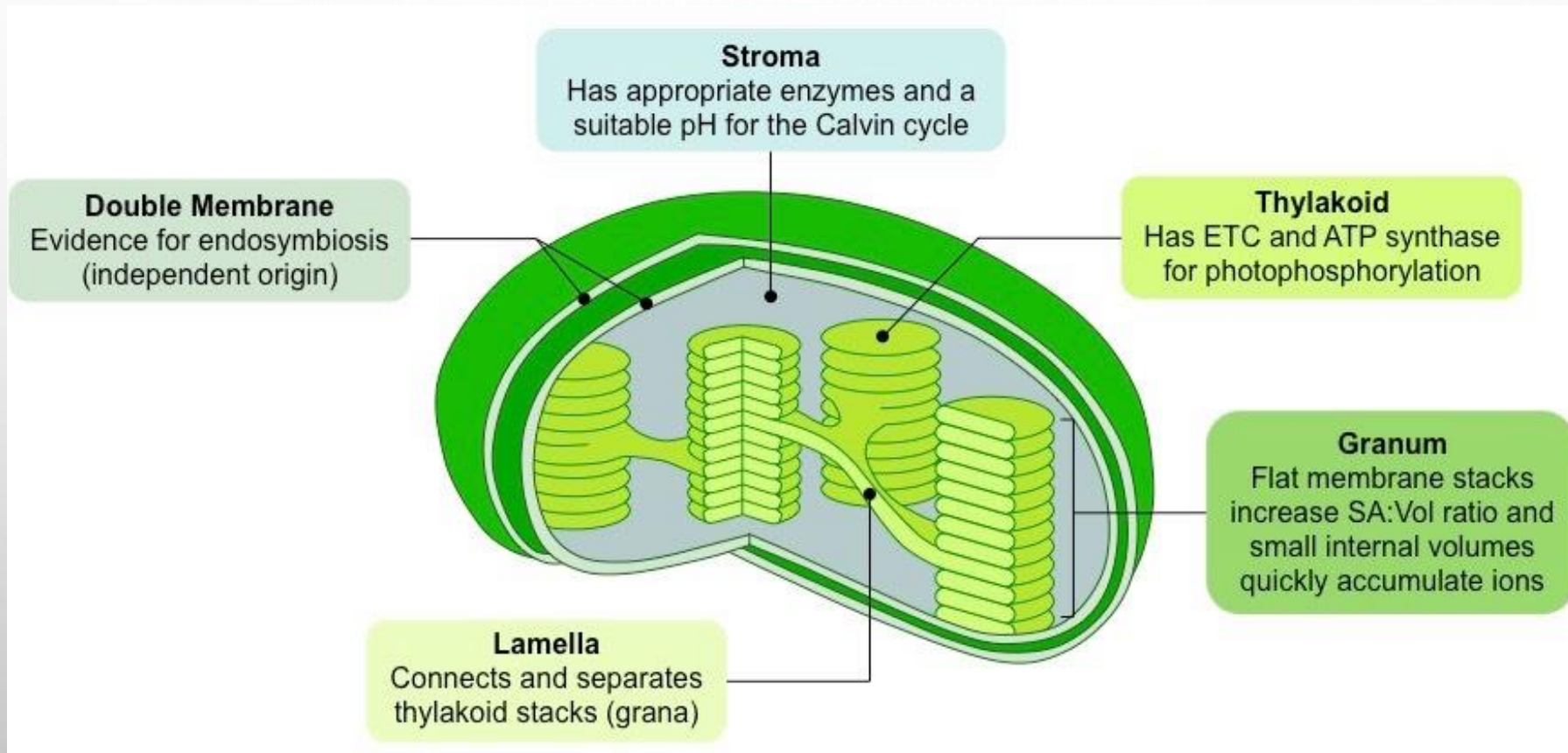
Max Photosynthesis takes place in Leaves because leaf consists of an organelle Chloroplast.

Chloroplast absorbs Sun light.

Chloroplast has 3 pigment which absorb light and these pigments are:

1. Chlorophyll A: It absorbs **Red, Violet and Blue light**.
2. Chlorophyll B: It absorbs **Blue and Indigo light**.
3. Carotenoids: It absorbs **Yellow and Orange light**.

***** Central metal of Chlorophyll: Magnesium



Process of Photosynthesis

Photosynthesis



Light reaction or photochemical reaction or Hill reaction - light dependent reaction



Dark reaction or Calvin cycle or Bio-synthetic reaction - light independent reactions

Light Reaction or Hill Reaction : Discovered by Hill. Takes place in the presence of light in thylakoids

Steps in Light Reaction

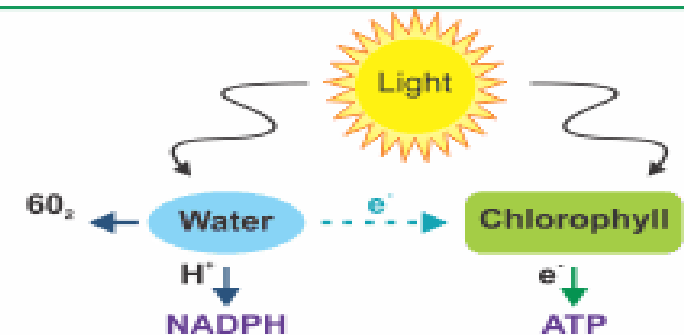
- ❖ **Absorption of Light Energy by Chlorophyll** : Chlorophyll on exposure to light gets activated by absorbing photons
- ❖ **Photolysis of Water** : Absorbed energy is used in splitting of water into hydrogen and oxygen, releasing electrons



- ❖ **Reduction of NADP** : Hydrogen ions released (photolysis) taken up by NADP (Nicotinamide adenine dinucleotide phosphate) is reduced to NADPH₂



- ❖ **Photophosphorylation** : Formation of ATP (adenosine triphosphate) from ADP(adenosine diphosphate) and inorganic phosphate in the presence of sunlight.



2. PIGMENTS OF PLANTS:

Onion - Sulphur

PIGMENTS <u>लक्षण</u>	COLORS	EXAMPLES
<u>FLAVANOIDS</u>	<u>YELLOW</u> , <u>LIGHT GREEN</u>	<u>LEMON</u> , NUTS, PULSES, CABBAGE. <u>grapes</u>
<u>CHLOROPHYLL</u>	<u>DARK GREEN</u>	GREEN LEAFY VEGETABLES, <u>Lady Finger</u> <u>Capsicum</u>
<u>CAROTENOIDS</u> (Eye)	ORANGISH YELLOW	* <u>CARROT</u> , <u>MANGO</u> , <u>PAPAYA</u>
<u>ANTHOCYANIN</u>	PINK+ PURPLE+BLUE	ONION, <u>BRINJAL</u> *
<u>LYCOPENE</u> *	<u>BRIGHT RED</u>	<u>TOMATO</u> , BLACK GRAPES, WATER MELON,
BETALENE <u>Xanthocyanin</u>	<u>PURPLE+ VIOLET</u> <u>White / OFF White</u>	JAMUN, BEET ROOT* <u>Radish.</u>

3. EDIBLE PARTS OF PLANTS:

PARTS OF PLANTS	EXAMPLES
ROOT	BEET ROOT, TURNIP, CARROT, RADISH, SWEET POTATO
STEM	ONION, POTATO, GARLIC, GINGER, SUGAR CANE, TURMERIC
LEAVES	GREEN LEAFY VEG, CABBAGE
SEED	PULSE, WHOLE GRAINS, BEANS, PEA, OIL SEED, NUTS, ALMOND
FLOWERS	CAULIFLOWER, BROCCOLI, CLOVES, SAPHRON

4. DIFFERENCE BETWEEN TRUE FRUITS AND FALSE FRUITS:

	False Fruit	True Fruit
DEFINITION	False fruits arise from floral parts other than the ovary.	True fruits arise as a result of fertilization where the fertilized ovary wall becomes the fleshy fruit.
FERTILIZATION PROCESS	Not involved	Involved
PARTS INVOLVED IN FORMING THE FRUIT	Floral parts such as thalamus, peduncle and perianth, parts other than the ovary.	Fertilized ovary
EXAMPLES	Apple, pears, jackfruit, pineapple, strawberry.	Mango, kiwi fruit, watermelon, cherry.

