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# Seeds Charts, Botany, School Education

## Product Image



## Description

**Standard Size:** 58x90cms

**Language:** English

Laminated Paper Charts with Plastic Rollers. These Charts have technically accurate and

detailed description in vivid colours.

**Note:** Based on minimum order quantity conditions, Charts can be customized to your requirements in terms of CONTENT, LANGUAGE, SIZE, etc. Please write back to us for discussion.

A. Charts, Photosynthesis

B. Charts, Germination of Seed-

Bean & Pea

### Photosynthesis

Process of manufacturing food by green plants with the help of water, carbon dioxide, sunlight and chlorophyll is called photosynthesis. Oxygen is released in this process.

$$6CO_2 + 12H_2O \xrightarrow[\text{Chlorophyll}]{\text{Light}} C_6H_{12}O_6 + 6H_2O + 6O_2$$

Photosynthesis is an anabolic process taking place in two distinct phases:

**1. Photochemical Phase (Light Reaction):**

- Anoxygenic Hill Reaction.
- Chlorophyll absorbs solar energy and becomes photoexcited.
- The photoexcited electrons get excited to emit electrons which travel through the electron transport chain in the chloroplast.
- Thus, ATP is synthesized from ADP and inorganic phosphate.
- Photolysis of water also takes place and oxygen is released.

$$H_2O \rightarrow 2H^+ + \frac{1}{2}O_2 + 2e^-$$

Hydrogen ions released during photolysis of water reduce NADP to nicotinamide NADPH.

**2. Biosynthetic Phase (Dark Reaction):**

- Krebs Cycle - Calvin Cycle.
- Occurs in stroma of the chloroplast using NADPH and ATP produced in the light reaction.
- Here carbon dioxide enters into a cycle of reactions starting with ribulose biphosphate (RuBP).
- At the end of the cycle carbohydrates is synthesized and RuBP regenerated.

#### Requirements for Photosynthesis

**1. Light**

- Starch is a polysaccharide.
- When one leaf is kept in a dark place for 48 hours and the other leaf is kept in a light place for 48 hours.
- Decolorize the leaf by boiling it in alcohol.
- The covered part does not turn blue-black with iodine solution showing absence of starch.
- This shows that light is necessary for photosynthesis.

**2. CO<sub>2</sub> Requirement**

- CO<sub>2</sub> is a primary raw material. Put it in airtight container.
- Take a leaf from that plant after 48 hours and test it in alcohol.
- The originally green part turns blue-black while the originally white portion does not turn blue-black with iodine solution.
- This shows that chlorophyll is necessary for photosynthesis.

**3. Carbon Dioxide**

- Place half of a leaf of a plant in a bottle containing KOH (KOH absorbs CO<sub>2</sub> present in the bottle).
- Leave the setup for 3-4 days in light.
- Test the leaf with iodine solution. The portion of leaf inside the bottle does not turn blue-black.
- The other portion turns blue-black.
- This shows that CO<sub>2</sub> is necessary for photosynthesis.

### Germination of Seed - Bean & Pea

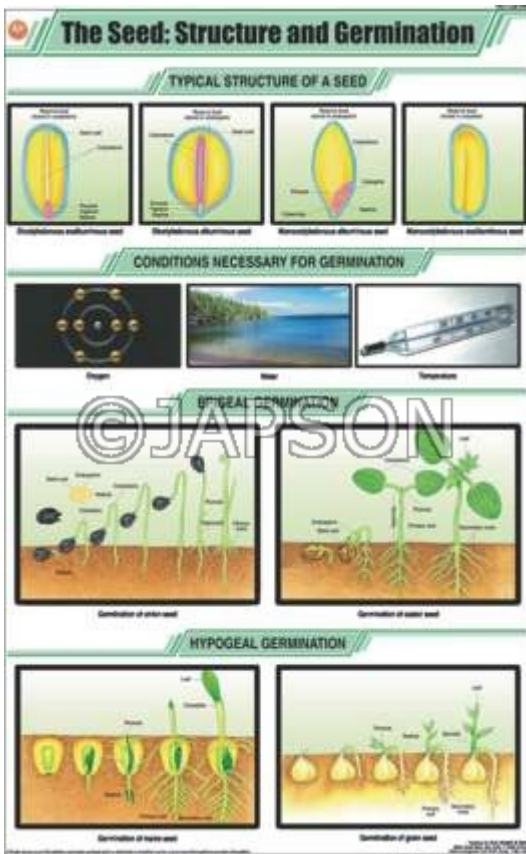
#### Germination of Pea Seed (Hypogeal)

- Cotyledon bursters out of the soil surface.
- The cotyledon grows upward and the first cotyledon out of the soil.
- The cotyledon grows upward and the first cotyledon out of the soil.
- The radicle forms the primary root which is soon replaced by many fibrous roots.

#### Germination of Bean Seed (Epigeal)

Cotyledons are brought above the ground due to the elongation of the hypocotyl.

C. Charts, The Seed: Structure and Germination



## Disclaimer

The Products details given on this page are indicative in nature and JAPSON reserves the right to change them without prior notice. Buyer is also requested to re-check the specifications and other features of product at the time of order as product development is a continuous process and minor modifications may be made to design based on latest availability, process and design.