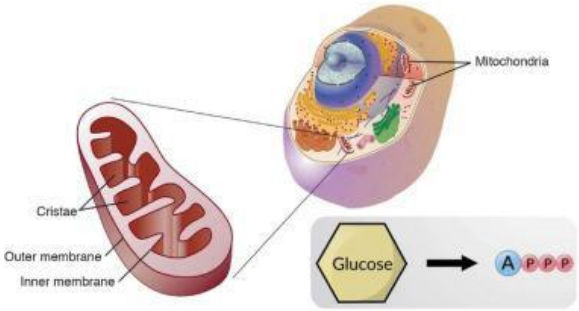
Aerobic Respiration

happens in the mitochondria in plant and animal cells.

use <u>glucose</u> and <u>oxygen</u> to make an energy molecule called <u>ATP</u>.

Water and CO_2 are waste products of cellular respiration.

Don't Copy. Only FYI:
ATP = adenosine triphosphate



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21% 0.04% 78% 16% 4% 78%

Gas	Amount in inhaled air	Amount in exhaled air
oxygen		
carbon dioxide		
nitrogen		
water vapour	Variable	

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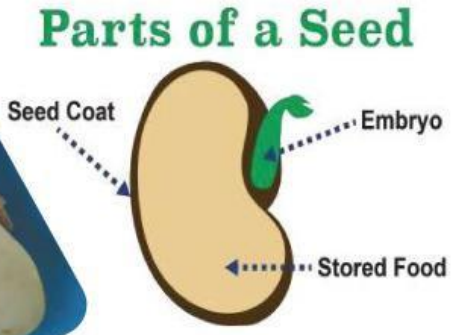
LIVEWORKSHEETS

Germination

is when a seed starts to grow.

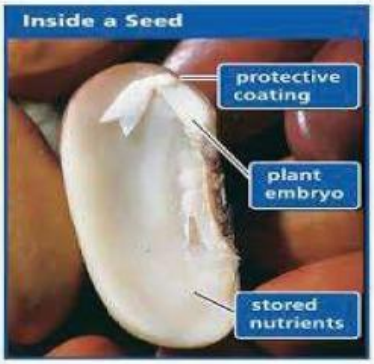


Parts of a seed:

1. **Seed coat**: The protective outer coating.

2. **Embryo**: The start of a baby plant.

3. **Stored food**: Used for **respiration** until the plant has leaves and can photosynthesize.



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Germination Factors

1. Water	2. Oxygen	3. Temperature
Water activates enzymes that use oxygen and stored food (sugar/starch) to make energy.	After water wakes up the seeds, they need oxygen to start making energy in **cellular respiration.**	The optimal temperature for germination varies between plants. But, all seeds must have some soil warmth.

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Functions of Parts of a Leaf

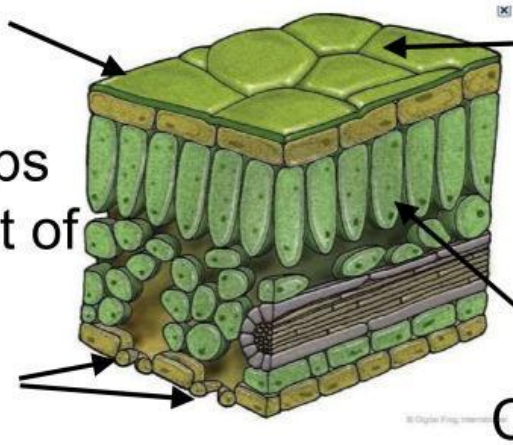
Waxy layer

Stomata

Large surface area

Chloroplasts

A waterproof layer that stops water loss out of the leaf.



Maximise light exposure.

Pores that open and close to allow CO_2 in, and water and O_2 out.

Cells are long and have lots of chloroplasts to maximise photosynthesis.

LIVEWORKSHEETS

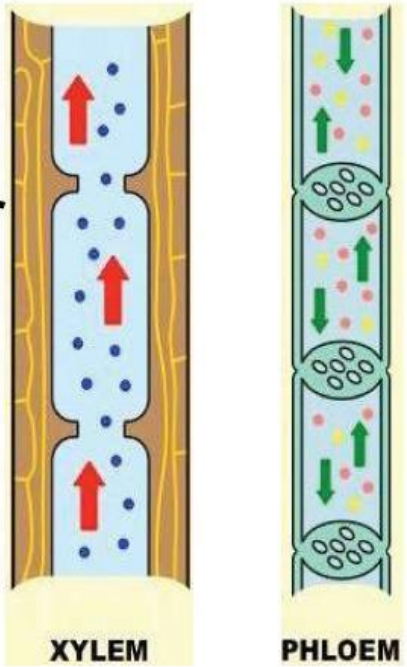
Xylem and Phloem

One-way flow

Transports water and minerals

No end walls between cells

Outer cells are **not** living



Two-way flow

Transports glucose

End walls (seive plates)

Outer cells are living but need support

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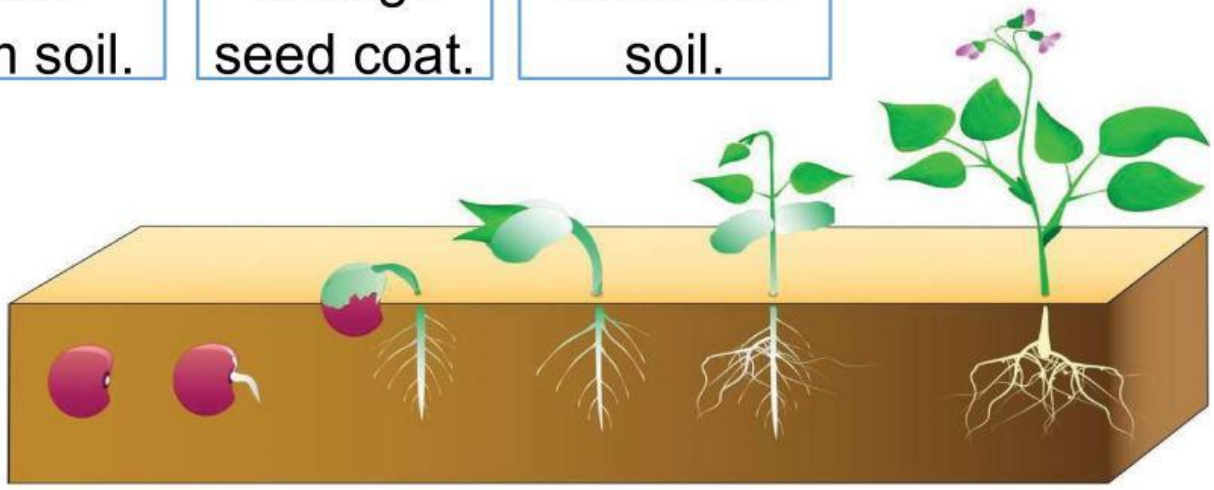
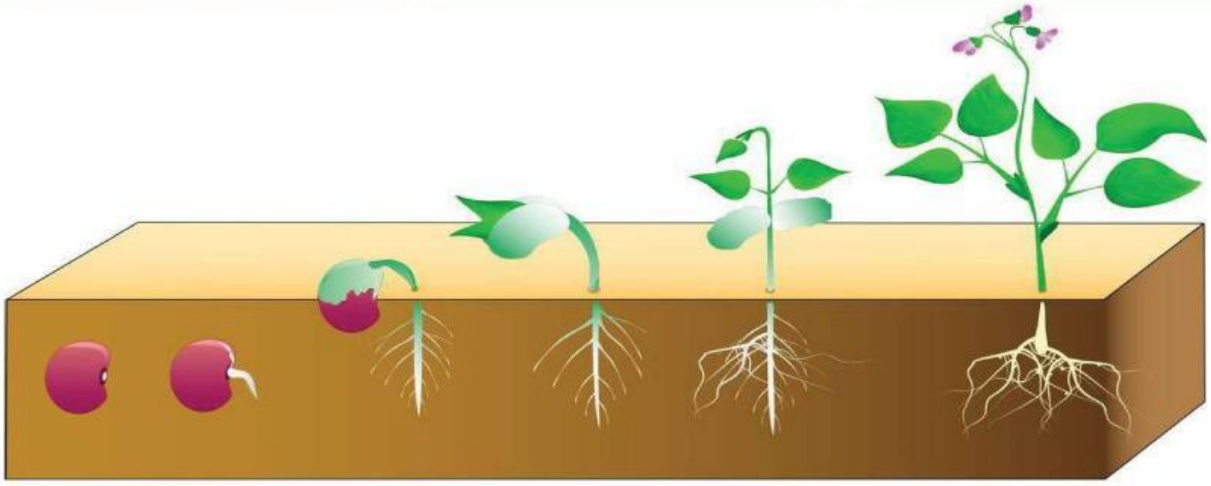
Seed absorbs water from soil.	Embryo breaks through seed coat.	Embryo sends root down into soil.



LIVEWORKSHEETS

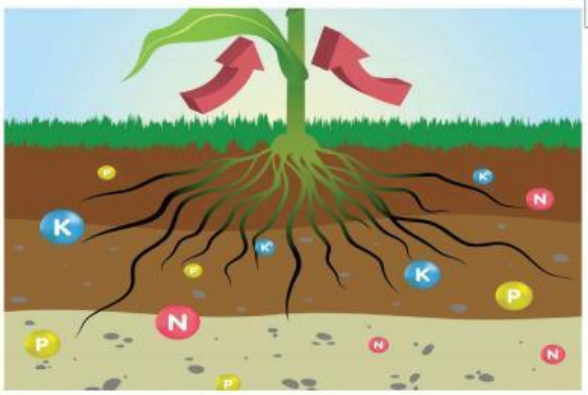
Shoot grows up above the soil.	Seedling starts to grow leaves.	Seedling grows into mature plant.

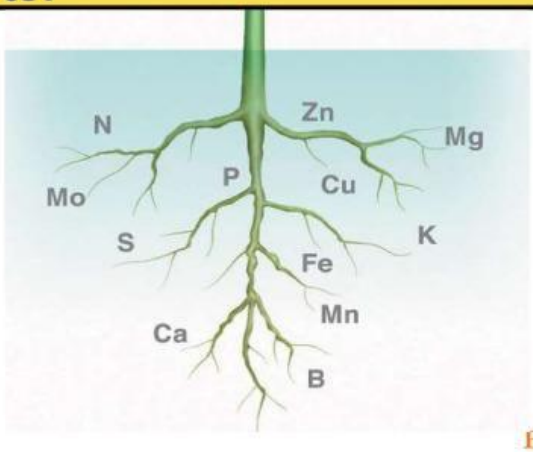


LIVEWORKSHEETS

Plant Nutrients

: The minerals that plants need which allow them to complete chemical reactions to live. There are at least 17 essential minerals needed for healthy plants.





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4 important minerals for plants

Nitrogen (N)

Phosphorous (P)

Potassium (K)

Magnesium (Mg)

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Fertilizers

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are substances that contain nutrients to help crops grow well. They can <u>increase</u> the farmer's .

- Using fertilizers helps crops **grow faster**, **bigger**, and overall it **increases the farmer's crop yield**.

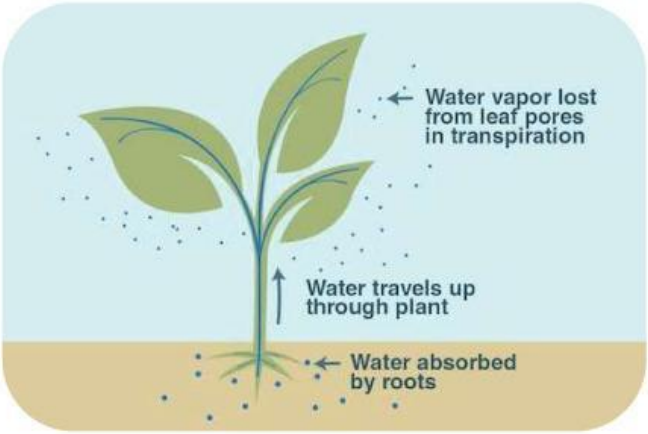
= how much food farmers get from their land

LIVEWORKSHEETS

Water and Mineral Transport

3 Steps

1. Osmosis
2. Capillary Action
   - adhesion
   - cohesion
3. Transpiration



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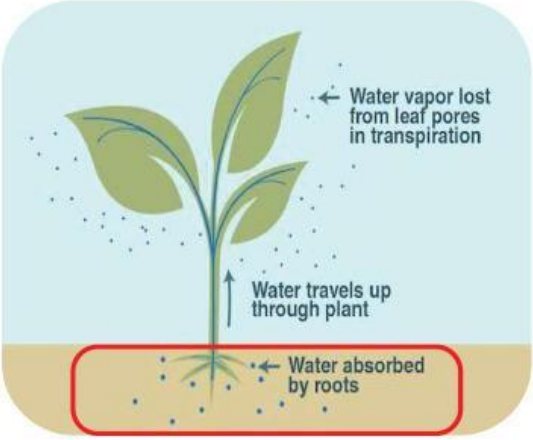
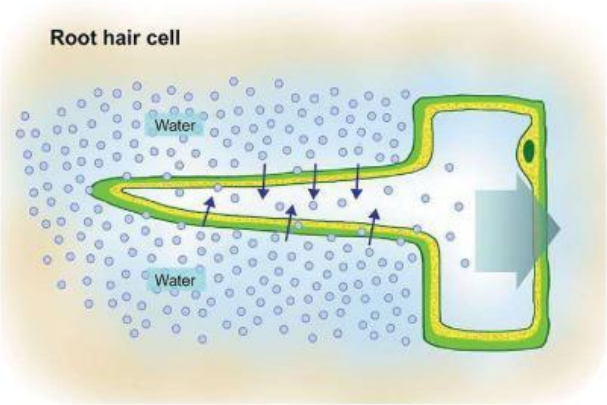
Step 1: Osmosis

Water and nutrients are absorbed into the root hairs and roots from the soil.





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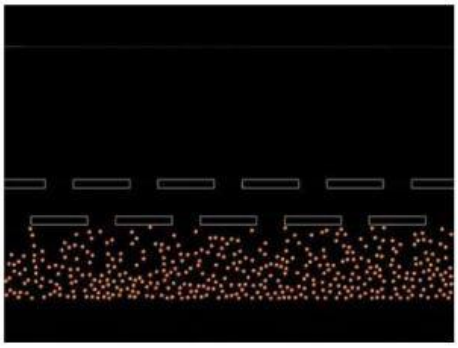
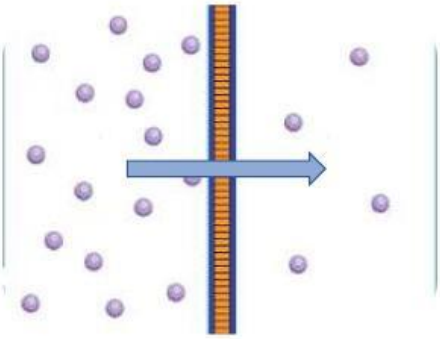
Step 1: Osmosis

Water moves into roots by osmosis. is the movement of *water* from an area of more water to an area of less water.





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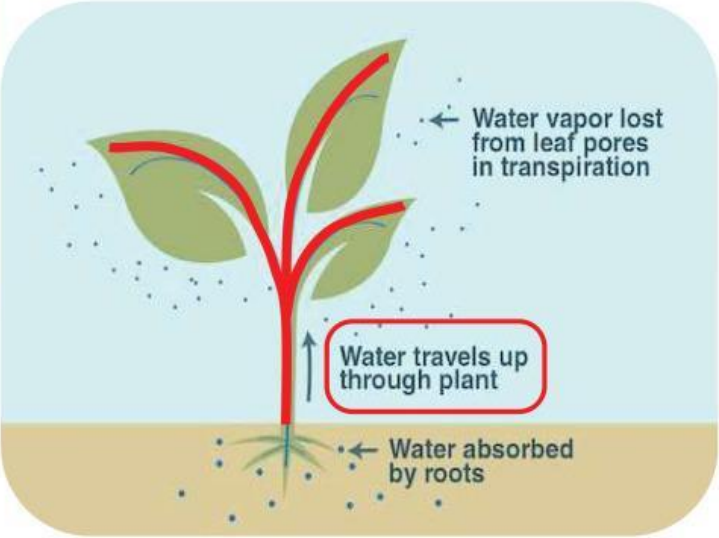
Step 2: Capillary Action

is when water moves through the narrow spaces of a material because of and .



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