How plants use glucose

Starter

1. Photosynthesis: carbon dioxide + water 🡪 oxygen + glucose
2. Three main limiting factors of photosynthesis: light intensity, temperature and carbon dioxide concentration
3. Plants need to photosynthesise for respiration and growth/repair

Plants need respiration for active transport

What happens to the glucose produced in photosynthesis?

* Used for respiration
* Stored as insoluble starch
* Synthesise other important molecules – Cellulose, amino acids and fats/oils

The starch test (method)

1. using a kettle fill a beaker with boiling water
2. Dip the leaf into the hot water for 1 minute to soften
3. Put the leaf into a test tube of ethanol. Stand the test tube in the hot water for about 10 minutes
4. Wash the leaf in cold water
5. Spread the leaf out on a petri dish and cover with iodine
6. If starch is present then the iodide will turn from orange/brown to blue/black

The starch test can be used to prove that photosynthesis needs light, carbon dioxide and chlorophyll to take place. Plants should be destarched by leaving in the dark for 48hrs before photosynthesis investigations because the starch already present in the plant may mislead the result.

Proving photosynthesis needs light – cover part of a leaf to exclude light. Perform the starch test.

Proving photosynthesis needs chlorophyll – Perform a starch test on a variegated leaf

Proving photosynthesis needs carbon dioxide – enclose 1 leaf in a clear plastic bag containing soda lime. Perform the starch test.