

Experiment A

1643-Jan van Helmont measured the mass of a container of soil then planted a tree seed in it. Several years later, the tree had gained a lot of mass and the soil had only lost a tiny amount. He had watered the tree over the years knowing it would die without water. He concluded that plants need water but not soil to grow.

Experiment B

1771-Joseph Priestley. Using a bell jar, a candle and a plant, Priestley discovered that a burning candle under the jar removed a gas from it. Adding a plant to the jar returned the gas. Priestly named the gas "oxygen" and found that its' molecular formula is O_2 and that it is produced by plants.

Experiment C

1779-Jan Ingenhous showed that oxygen is produced by aquatic plants placed in the light but not in the dark. He concludes that plants need sunlight to produce oxygen.

Experiment D

1845-Julius von Mayer found that plants could only produce oxygen when light was present. Mayer proposed that plants convert light energy into chemical energy stored in compounds. The compounds account for more than 90% of all plant substance.

Experiment E

1940's Melvin Calvin used radioactive carbon to trace the progress of carbon in photosynthesis. It was already known that plants used carbon dioxide in photosynthesis. He showed that molecules of carbon dioxide from air were linked to form sugars, $C_6 H_{12}O_6$

Experiment F

1950's A radioactive form of oxygen was used to form water molecules, H_2O^* . Plants watered with these molecules gave off radioactive oxygen, O_2^* .