

Germination experiment (Answer sheet)

1. In the following sentence, fill in the spaces using the words provided in the box below.

Answer: **Plants** produce their own **food**, which they need to survive, **grow** and reproduce. They use their **leaves** to capture the sun's **energy** and use it to transform **water** and **carbon dioxide** into **sugar**. This process is called **photosynthesis**.

2. Why did the seed change in size during the first 24 hours?

Answer: The seed grew in size because it absorbed water through a microscopic opening called a micropyle. The tissues in the seed became soft. When dry, pulses keep well. However, the longer they are stored dry, the less they can absorb water. This happens because the seed casing gets tighter around the cotyledons and the micropyle gets smaller, making it harder for water to penetrate the seed.

3. Did the seeds from which you removed one or two cotyledons grow as fast as the seed that remained intact? Why?

Answer: The cotyledons are like well-stocked pantries. They provide the sugar and all the other building blocks the plantlet needs, such as oil, minerals and protein. The seed with only one cotyledon can continue to grow, but removing both cotyledons takes away the plantlet's



source of food and prevents it from continuing to grow.

4. Before a plant has leaves, where do you think it gets the energy (food) it needs to sprout?

Answer:All plant seeds contain the same parts: an embryo, a food source (cotyledons or endosperm) and a protective casing. (The size and shape of these parts, however, varies from one plant family to another.)

In legumes (pulses belonging to the legume family), food for the embryo is found in two large cotyledons. The parent plant stores sugar in these structures, which are attached to the embryo. When the seed absorbs water, the stored food is released and then absorbed by the embryo.

The food reserve allows the young plant to grow roots, outgrow its protective casing (seed coat) and form a stalk and its first leaves. Before the young plant uses up all its food reserves, it's able to make its own food through photosynthesis.

This lesson plan was produced by the Canada Agriculture and Food Museum.

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