

Super Seeds

Standards of Learning

Science: 1.1, 1.4, 2.1, 2.3, 3.1, 3.6, 4.1, LS.1, LS.4, LS.12

Objective

The student will

- generate a hypothesis and record observations.
- identify moisture and warmth as conditions necessary for a seed to germinate.

Materials

- small, clear plastic cup
- 5 tablespoons of plaster of Paris
- 2 or more tablespoons of water
- plastic spoon for mixing
- dropper
- soybean seeds

Background Knowledge

Seeds require moisture and warmth to germinate. In this case the seed absorbs moisture from the plaster mixture. As the seed absorbs water it increases in size and applies pressure to the surrounding plaster. This force, combined with the strength of the germinating sprout, causes the plaster to crack and allows the shoot to grow up through the plaster. This strength and ability to grow in adverse conditions allows plants to survive in a wide range of environments. You may also notice that when water is mixed with plaster the cup becomes warm. A chemical reaction which gives off heat like this is known as an *exothermic* reaction.

Procedure

1. Ask students to list the conditions necessary for a seed to germinate (moisture, warmth).
2. Place plaster of Paris in a plastic cup.
3. Add water and mix. Continue to add drops of water until the mixture has the consistency of a very thick milkshake.
4. Have students make observations of what happens when water is added to the plaster.
5. Push 3 soybeans into the plaster until they are covered, then smooth the surface of the plaster.
6. Have students create a hypothesis of what they think will happen to the soybeans.
7. The next day, add a tablespoon of water to the cup and continue to make observations.
8. Make regular observations. What happens? Why?
9. Revisit the students' hypotheses, were they supported or rejected? Why?

Extension

Conduct an experiment testing different variables. Examples:

- different seeds
- different amounts of plaster of Paris
- different amounts of water
- grow the seeds in different temperatures

References

Lesson adapted from Louisiana Ag in the Classroom.

