1.3 Simple Plant Genetics Experiment

# Instructions

**Materials Needed:**

* Two or more different potato varieties (e.g., red potatoes, yellow potatoes, purple potatoes)
* Pots or containers with drainage holes
* Potting soil or garden soil
* Watering can or spray bottle
* Labels for each variety
* Ruler or measuring tape
* Notebook or journal for documenting observations
* Optional: Magnifying glass for closer observation

**Setup:**

1. **Prepare the Containers:**
   * Fill each pot or container with soil, leaving some space at the top for planting the potatoes.
2. **Plant the Potatoes:**
   * In each pot, plant a potato or a piece of potato from each variety. Make sure the “eyes” (small sprouts) are facing up, and plant them about 5 cm (2 inches) deep in the soil.
3. **Label the Pots:**
   * Label each pot with the variety of potato planted in it to avoid confusion.
4. **Place the Containers in a Sunny Spot:**
   * Put the pots in a location with plenty of sunlight, such as a windowsill or a sunny area outdoors. Ensure they get at least 6 hours of sunlight each day.

**Activity Instructions:**

1. **Observe and Record Initial Differences:**
   * Before the potatoes sprout, students can document the differences they can see in the potato varieties, such as skin colour (red, purple, yellow) or shape. They can also take notes on any unique features they observe (e.g., some potatoes may have more “eyes” or different textures).
2. **Monitor Growth Over Time:**
   * As the potatoes begin to sprout, students should measure the height of the plants at regular intervals (e.g., weekly). They can note any differences in growth rates between the varieties.
3. **Compare Plant Features:**
   * Students should observe and record differences in leaf shape, colour, and size. They can use a magnifying glass to inspect the texture and appearance of the leaves, stems, and roots.
4. **Track Flowering (if applicable):**
   * Some potato varieties may produce flowers. Students should observe any differences in the flowers, such as colour and size.
5. **Discuss Genetic Differences:**
   * As the plants grow, introduce the concept of genetics to the students, explaining that the differences in colour, texture, and growth rates are due to the genetic makeup of each variety.
6. **Record and Compare Results:**
   * At the end of the experiment, students should compare the potatoes from each variety. They can measure the size of the potatoes and note any variations in shape, colour, or texture.

**Safety Note:**

* Ensure that students handle the soil and plants gently to avoid damaging the potato plants.
* If using tools to dig or measure the plants, ensure students use them safely and under supervision.

**Learning Outcomes:**

1. **Understanding Plant Genetics:** Students will learn how different potato varieties can exhibit genetic differences, such as variations in colour, texture, and growth rate.
2. **Basic Scientific Observation:** Students will practice observational skills, noting the differences between the plants and documenting their findings over time.
3. **Concept of Heredity:** This experiment introduces the concept of heredity, explaining how certain traits are passed down from parent plants to their offspring.
4. **Scientific Documentation:** Students will develop skills in tracking data, measuring growth, and drawing conclusions based on their observations.

Through this simple experiment, students will gain an understanding of plant genetics and the diversity found in nature, while practising essential skills like observation, measurement, and documentation.