Name: Jaylyn McDougal

CASE
Curriculum for Agricultural Science Education

Lab Report Template

Jaylyn McDougal

Activity

Problem

How did the 3 petunia family die.

Hypothesis

The 3 members of the petunia family died from water.

Materials

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Per class:

- Soil sample A
- Soil sample B
- Soil sample C
- Soil sample D
- Soil sample E

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Per pair of students:

- LabQuest®
- Vernier pH Sensor
- Computer station with Internet access
- 100 ml Graduated cylinder
- 5 16 oz plastic cups
- Distilled water
- Rinse bottle
- 5 plastic spoons
- Paper towel
- Permanent marker pen

Procedures

You and your partner will develop a theory for what you believe may have killed members of the Petunia family. You will base this theory on the information provided about the case so far. You and your partner will conduct pH tests on each sample of soil in which the Petunia family was growing. With a little research, you will determine if clues from testing the pH provides you enough evidence to validate your claims.

Part One – Develop a Theory

Write a one or two sentence statement expressing what you believe happened to the Petunia family with the clues you know so far. Identify specific claims you are making regarding pH as the possible suspect for each sample of soil.

My hypothesis is that some of the plants were not strong enough to contain a lot of water so the became acidic.

Part Two – Testing for pH Evidence

You and your partner will conduct a test of each soil sample from the Petunia family. Follow the procedures outlined below and record your findings in Table 1.

1. Label the five 16-ounce plastic cups using a permanent marker with the following titles:
    - Sample A – Richard Petunia
    - Sample B – Sally Petunia
    - Sample C – Peter Petunia
    - Sample D – Paula Petunia
    - Sample E – Petra Petunia
2. Place four spoonfuls of soil (approximately 80 grams) from sample A into your cup labeled A. Keep the spoon used to transfer the soil to the cup inside the cup for mixing later.
3. Repeat this process for the remaining four soil samples.
4. For each sample measure out 100 ml of distilled water and add the water to each cup.
5. Stir each sample thoroughly for 1-2 minutes.
6. Let each sample settle for five minutes. You do not want soil particles floating in your mixture when you test for pH.
7. While you are letting the samples settle, set up the LabQuest and pH Sensor.
    - Connect the pH Sensor to LabQuest and choose “New” from the File menu.

      Important: For this experiment, your teacher already has the pH Sensor soaking in a beaker with solution. Be careful not to tip over the beaker when connecting the sensor to the LabQuest interface.

    - On the Meter screen, tap “Mode”. Change the data-collection mode to Selected Events.
    - Select Average over 10 seconds and select OK.
8. Measure the pH.
    - Start data collection.
    - Rinse the tip of the sensor with distilled water and place into the **liquid part** of Sample Cup A. **Important:** Leave the probe tip submerged while data is being collected for 10 seconds, but do not allow the tip of the sensor to settle into the soil.
    - Tap “Keep”.
    - Repeat data collection by again tapping “Keep”. Leave the probe tip submerged for the full 10 seconds.
    - Stop data collection by tapping stop.
    - Tap “Table” to view the data. Average the two pH values for the sample and record the average for sample A in Table 1.
9. Repeat Step 8 for Samples B, C, D, and E.
10. Rinse the pH Sensor with distilled water and return it to its storage container.

11. Clean up the laboratory according to teacher instructions.

Data Collectio

Table 1 *pH Levels*	
Sample	**Average pH Reading**
Sample A – Richard Petunia	3.78
Sample B – Sally Petunia	4.96
Sample C – Peter Petunia	6.5
Sample D – Paula Petunia	6.8
Sample E – Petra Petunia	7.0

1. Use an Internet search or the reference textbooks in the classroom to research the proper pH range for growing petunias and indicate this range below:

Optimal pH range for petunias	6.0 to 7.5

Analysis of Results

They are acidic because they are below 6.0 and they need to be above it.

Conclusions

My conclusion is that some of the plants were strong enough to hold a lot of the water and some of the plants were weak and died from too much water.