

Tree Cycle Experiment

Experiment Objective: Watch what happens as a pinecone is exposed to warm water vs. cold water.

Before your start: Begin by thinking about pinecones. What does a pinecone look like? Why do some trees have pinecones? What is found inside of a pinecone? Do all pinecones look the same?

Supplies:

- Three clear containers big enough to fit a few pinecones
- Dry pinecones of varying shapes and sizes
- Hot water
- Cold water
- An old towel to clean up excess water

Method:

- Step 1: Gather the supplies.
- Step 2: Fill one container with cold water, and one container with warm water. Leave the third container empty.



Hoyt
Arboretum
Friends

Tree Cycle Experiment

Method (continued):

- Step 3: Observe the pinecones before you start the experiment. The pinecones should be dry, so take a look at each one closely to see how “open” or “closed” it looks. What do you think will happen once the pinecones are added to the water? Do you think they will open or close once in the water? Will the temperature of the water affect what happens?
- Step 4: Once you have observed the dry pinecones and come up with a hypothesis, it’s time to perform the experiment! Begin by taking a pinecone and placing it in the container with warm water. Watch what happens!
- Step 5: Next, take the same pinecone and place it in the container with cold water. Did anything change?
- Step 6: Finally, place the pinecone in the empty third container and wait for it to adjust to air temperature again. You may want to dry it off with the towel. What changes do you see?
- Step 7: Perform this experiment with different pinecones and see if they all react to the water in the same way.

Conclusion: Revisit your answers to the questions in Step 3. Was your hypothesis correct? What changes did you observe? Did all the pinecones react the same way?



Hoyt
Arboretum
Friends

Tree Cycle Experiment

Continue the experiment: What would happen if you put the pinecones in the cold water first? What if you exposed them to warm air versus cold air?

The science behind this experiment: When the weather is dry, the cones will open and release the seeds inside. When the weather is wet, the pinecone will close up and protect the seeds within. Once the pinecone dries out again, the cells will shrink and the pinecone will open, once again allowing the seeds to be released.

Here are some examples of closed and open pinecones:



Hoyt
Arboretum
Friends