

101+ AMAZING Science Project Ideas: PLANT BIOLOGY



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How Many Seeds Do Different Types of Fruit Produce?

Do you like your strawberry jelly with or without the seeds? Are you glad to have a seed-free watermelon, or do you enjoy spitting the seeds into the garden? You might not like to find seeds in your fruit, but fruit is nature's way of dispersing seeds to make new plants. How many seeds can be dispersed for each type of fruit? As they say, in one end and out the other!

[Difficulty](#) = 1

Suck It Up: Capillary Action of Water in Plants

Have you ever heard someone say, "that plant is thirsty" or "give that plant a drink of water"? We know that plants, and even bouquets of cut flowers, need water to survive, but have you ever thought about how the water moves within the plant? In this science project, you'll use colored water and carnations to figure out where the water goes.

[Difficulty](#) = 1

Gone With the Wind: An Experiment on Seed and Fruit Dispersal

Up, up, and away! If you have ever made a wish and blown the fluff of a dandelion, you have witnessed how some plants are adapted to spreading their seeds using the wind. The tiny, furry parachute allows the seeds to be picked up by the wind and to be carried far away from their parent plant. In this experiment, you will make models of seeds and fruit to investigate dispersal by wind and to evaluate the relationship between the structure of the seed and its ability to be dispersed by the wind.

[Difficulty](#) = 1

What Color Are the Leaves Really Turning?

Everyone loves the beautiful colors of fall, but where do they come from and how does the change in colors happen? In this project, you will uncover the hidden colors of fall by separating plant pigments with paper chromatography. What colors will you see?

[Difficulty](#) = 1

Leaves and Light

Leaves use sunlight to make food for the plant. Sunlight contains all of the colors of the rainbow, but are all of those colors used by the leaf? Can you find out if some colors of light are more important than others?

[Difficulty](#) = 2

Do Potatoes Regulate the Formation of New Roots?

Did you know that potatoes have eyes? Not eyes for seeing, but eyes for making roots. Why don't the eyes of potatoes in the store have roots on them? Do this experiment, and watch a potatoes eyes grow out!

[Difficulty](#) = 2

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[Attack of the Killer Cabbage Clones](#)

Do you like to watch outdated science fiction and cheesy horror movies? Many fictional tales of cloned organisms have been created based upon the scientific method for cloning animals or plants. In the real world, the cloning of plants is a common method used in modern agriculture. How do you clone a plant?

[Difficulty](#) = 2

[Growing, Growing, Gone! An Experiment on Nitrogen Fertilizers](#)

Plants need nitrogen to build proteins and nucleic acids to grow healthy stems and leaves. Though the Earth's atmosphere is made up of 79% nitrogen, the form of nitrogen found in the atmosphere cannot be used by plants. In this experiment, you will compare plants grown without nitrogen fertilizer to plants grown with nitrogen fertilizer.

[Difficulty](#) = 2

[Radiant Radish Seeds](#)

We all know that plants need sunlight and water to grow big and tall. But did you know that inside seeds are baby plants, and that the fragile baby plant inside the seed needs to be protected? If you've ever had a sunburn, you also know that the sun gives off harmful radiation and heat. How much radiation and heat can a seed handle? Find out using some radish seeds, an oven, and your microwave!

[Difficulty](#) = 3

[Shoots: How do Mint Plants Branch to Form New Stems?](#)

Do you like to climb trees? The branches of trees are what make them so fun to climb. Each branch starts out as a tiny shoot that grows out from a stem. How is the growth of shoots along a stem regulated?

[Difficulty](#) = 3

[Plants Are On The Move! A Study of Gravitropism](#)

As we humans zip from place to place, we often forget to stop and smell the roses. Compared to our fast-paced lifestyle, plants seem rooted to the spot. Don't be deceived by appearances however, plants are on the move! This experiment will investigate the stimulus/response relationship in plants and prove that plants can move up and down in response to gravity.

[Difficulty](#) = 3

[It's Crowded in Here! A Study of Plant Population Density](#)

Like humans, plants can be negatively affected by overcrowding. Unlike humans, plants cannot get up and move to a new environment or explore how to utilize new resources. This experiment will explore the effects of crowding (population density) on the growth and health of plants.

[Difficulty](#) = 3

[How Do Roots Grow When the Direction of Gravity Changes?](#)

You might not know it, but plants are able to sense their environment and actually respond appropriately. One of the key parameters that every plant must respond to is the direction of gravity: stems go up (opposite to the pull of gravity) and roots go down (in the same direction as the force of gravity). In this project, you will construct simple devices that hold several germinating seeds, which allow you to watch how growing rootlets respond as you rotate the devices, effectively altering the direction of gravity.

[Difficulty](#) = 4 – 8

[Cryopreservation: Freezing Plant Tissues](#)

Cryopreservation—storing seeds in ultra-cold liquid nitrogen—is one method for maintaining plant genetic stocks in seed banks. Can seeds withstand a really deep freeze and still germinate?

[Difficulty](#) = 5

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[Size vs. Depth: The Relationship Between the Size of a Seed and Its Ideal Planting Depth](#)

Plants have evolved many clever mechanisms to ensure that their seeds will wait for appropriate conditions before sprouting. Some may only germinate after a fire, others only after going through a cold spell. This project explores one important variable among many that determine the ideal conditions for seed germination.

[Difficulty](#) = 5

[One Bad Apple Spoils the Whole Bunch: An Experiment on the Plant Hormone Ethylene](#)

We have all heard the old saying, "One bad apple spoils the whole bunch." Due to the production of the plant hormone ethylene during the ripening process, this saying proves true! This experiment will investigate the role of ethylene in the process of fruit ripening.

[Difficulty](#) = 5

[Earthworms: Nature's Tiller?](#)

Everybody knows that worms are good for the soil, but not everybody knows why. Here's an idea for measuring how efficiently earthworms turn over organic surface material into the soil.

[Difficulty](#) = 5

[The Effect of Hydrogen Peroxide on the Rooting of Plant Cuttings and Seed Germination](#)

Hydrogen peroxide (often used as a disinfectant) has been approved for use in pesticides. This project investigates whether hydrogen peroxide has any effects on seed germination or rooting of plant cuttings.

[Difficulty](#) = 6

[Bacteria Can Fix It! A Comparison of Nitrogen-Fixing Bacteria and Nitrogen Fertilizers](#)

Plants need nitrogen to build proteins and nucleic acids to grow healthy stems and leaves. Though the Earth's atmosphere is made up of 79% nitrogen, the form of nitrogen found in the atmosphere cannot be used by plants. In this experiment, you will compare the increase in biomass of clover plants grown in soil with no nitrogen added, in soil with nitrogen fertilizer added and in soil with nitrogen-fixing bacteria added.

[Difficulty](#) = 6

[Earthworm Castings -- The Ideal Proportion in Soil for Young Garden Plants](#)

Everybody knows that worms are good for the soil, but not everybody knows why. Here's a project that investigates just one of the ways earthworms improve the earth.

[Difficulty](#) = 6

[Humic Acid and the Optimum Soil for Plants](#)

Humic acid is touted as an organic soil additive to improve plant growth by multiple means. Does it really work? Here's how you can find out.

[Difficulty](#) = 6