



BRONZE AWARD

PLANT GROWTH & NUTRIENTS



Typically 10 hours of project work
Recommended for 11-14 year olds



**Practical
project**

Find out how nutrients in
compost affect growth rates

#biology

#plants

#gardening



HOW TO RUN CREST USING THIS ACTIVITY

Looking for some support? Find a mentor by contacting your local STEM Ambassador hub: www.stem.org.uk/stem-ambassadors/local-stem-ambassador-hubs

To use their project to achieve a CREST Bronze Award your students will need to:

- **Complete a minimum of 10 hours of project work**
- **Consider the broader impact of their project and demonstrate an innovative approach**
- **Complete the project workbook or short report in another medium**
- **Reflect on their work during the project using a student profile form**

Preparation

Ready to get going with CREST? Sign up for a CREST account here: www.crestawards.org/sign-in

Create a new Bronze Award project with the name(s) of the student(s) and the title of their project. If you don't have all the details, you can fill these in later!

Run the project

We have some super handy workbooks and profiles for your students to use when running a CREST Award. You can download these when you create your CREST account by following the link above.

Encourage your students to use the workbook or profile to plan and carry out their project, keeping a record of all their amazing progress.

Make sure you consider safety and risks!

Reflection

So, your students have been hard at work and completed their CREST project, but don't let this be the end of their learning. They should now fill in any remaining sections of their workbook. This is a chance for them to reflect on all the interesting things they've learnt and the invaluable skills they have used.

Enter your project for a CREST Bronze Award

Hard work deserves a reward! Celebrate and certify your student's achievements by entering their project for a CREST Bronze Award. Simply:

Log in to your CREST account at www.crestawards.org/sign-in

Select the project and upload a sample of the students' workbooks or other project evidence.

Check the participating students have met each of the criteria on the teacher assessment page.

Finally, complete the delivery and payment details to order your snazzy certificates.

Congratulations on completing CREST Bronze!

What next?

The scientific discovery doesn't need to end here. Students can have a go at the next level up - CREST Silver.

Don't keep all the fun to yourselves, encourage others to take part in CREST projects and share the wonder of science. For free ideas on how to get started, see www.crestawards.org

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How do nutrients affect plant growth?

In this project you will investigate how the nutrients in compost affect the rate of growth of seedlings. Many types of seed will work, but radish or lettuces are often chosen because they grow quickly.

Getting started

Despite the high rate of growth in rainforests the soil is poor in nutrients. The nutrients have been washed out of the soils by heavy rainfall.

Plant your seeds in seed trays (following the instructions on the packet), water them, and place them in a well-lit location. You can help the seedlings to grow by using a propagator lid to maintain humidity.

Alternatively, you could use makeshift propagators such as a simple polythene bag inflated around the seed tray or a plastic bottle cut in half to provide a close-fitting lid.

You need to make sure that the soil/compost in the seed trays remains moist – trays without covers will need regular watering. Remember that you want your tests to be fair so make sure all your seeds are in the same conditions of light, temperature moisture etc.

Keep a daily record of the number of seeds that have germinated, plant growth, and observations about plant health such as colour, height etc. You will need to decide what measurements to use as indicators of plant growth, for example, plant height or number and size of leaves. You will need to make your measurements daily for about three to four weeks.

Presentation of results: Choose at least two of your indicators of plant growth to plot as graphs to show how the different combinations of compost and soil affect plant growth. You will need to comment on your results.

Things to think about

Did the results agree with what you expected?

Was there a pattern to your results?

Were your results consistent enough for you to be able to make a conclusion?

Which of the different ways of measuring plant growth do you think was the most suitable? Why?

Useful resources

Talk to a person at your local garden centre about the right type of seed to use for this experiment

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Health and safety

A science project is both dynamic and exciting but can also carry some risk. To avoid any accidents, make sure you stick to the following health and safety guidelines before getting started:

- find out if any of the materials, equipment or methods are hazardous;
- assess the risks (think about what could go wrong and how serious it might be);
- decide what you need to do to reduce any risks (such as wearing personal protective equipment, knowing how to deal with emergencies and so on);
- make sure your teacher agrees with your plan and risk assessment.

Make sure you pick soil samples that are not contaminated with, for example, dog muck or broken glass. Always wash your hands thoroughly after handling soil.

Remember!

Science isn't just about data. The most successful projects will demonstrate good communication skills and show original ideas that address a real-world problem.

Look at the world around you and consider all the innovative ways that you could address the challenge. Even if things go wrong, use this to show what you have learned. Don't forget to use the student profile form to help structure your project.