



# QUILLS

Queen's University Indigenous Land-Based Learning STEM  
Queen's University Biological Station





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Plants are essential for life as we know it. They provide food, fiber, building material, fuel, and medicines. Plants also decorate our homes, both inside and out, and mark special occasions, such as weddings and funerals. For thousands of years, people around the world have grown plants in containers and brought them into their living spaces. For thousands of years, plants and gardening have also been considered good for people, physically, mentally, and socially, yet until recently, information about the effects of plants on people were based on case studies, such as people saying working in their gardens made them feel better. Today there are numerous scientific studies documenting the relationships between people and plants, both indoors and out. The information shared in this infographic take excerpts from the paper "What Are the Benefits of Plants Indoors and Why Do We Respond Positively to Them?" by Virginia Lohr in 2010. Some text has been modified for a younger reading level.

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## Air Pollution

Studies showed that many common leafy plants reduced levels of some indoor pollutants. The pollution reduction was largely due to bacteria growing on the plant roots. Based on the findings, researchers were able to develop a biofiltration unit with interior plants and an aquarium that can effectively maintain healthy indoor air.



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## Humidity

Humidity is moisture in the air. A study found that leafy plants can raise the humidity to healthier and more comfortable levels in indoor spaces. The humidity of the air inside buildings is often below the range of 30% to 60% recommended for human comfort, especially when buildings are being heated. When the indoor humidity is too low, colds are more frequent and wood dries and cracks. In this study, when plants were present, less than 2% of the space was occupied by the plants, yet relative humidity was raised from 25% without plants to 30% with plants. Some people have been concerned that indoor plants might increase the humidity too much, but this is not likely: when the humidity rises, the rate of water loss from the plant slows, because water does not evaporate as quickly when humidity is high.



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## Dust

The influence of interior plants on dust build up has also been explored. Adding plants to the edge of a room reduced the amount of dust by as much as 20%, even in center of the room, many meters from the plants.

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## Sound

Studies showed that plants can reflect, diffract, or absorb sounds, depending on the type of sound. Plants were shown to lower noise in some situations. The effects were different depending on the tone of sound, where the plants were placed, and the specific room. Generally, the researchers found that plants worked best at reducing high pitched sounds in rooms with hard surfaces; the effect was similar to adding carpet.



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## Feelings

In a study, people were asked how they felt in a room with three different situations: no colorful objects, colorful objects, or interior plants. People felt significantly more "carefree or playful" and more "friendly or affectionate" in the room with indoor plants than in the room with or without decorative objects. Another study compared office workers in buildings with or without indoor plants and with or without windows with views of green spaces. No more than 60% of people working in offices without plants, whether they had views of green or not, reported feeling "content" or "very happy," while 69% of people working in offices with plants but no windows and 82% of those with both plants and window views were "content" or "very happy."



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### Lowering Stress

A number of studies showed that people recover from stress more quickly when viewing slides or videotapes of nature than when viewing images of urban scenes. A later study showed that peoples' stress was lowered when they were in a room with a few interior plants, even when their attention is not drawn to the plants. People in the study were monitored while doing a computer task. People were randomly asked to do the task when no plants were in the room or when plants were there and put within the participant's peripheral vision. While doing the computer task, participants' blood pressure rose, showing that the task was stressful. When with plants, the rise was not as great, and it returned to normal levels more quickly than for those tested without plants. This showed that indoor plants, like images of nature, could produce a calming response. Other researchers have also found that indoor plants make stress reducing effects that are similar to those made by nature.

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## Productivity

Productivity is how well someone is able to do a task or job. It has been shown to be higher when plants are present. The computer task study mentioned before measured productivity by watching the time it took to complete a task. People responded much more quickly when plants were in the room than when the plants were not there. Reaction time when plants were there was 12% faster than when the plants not there, showing that plants helped to increase productivity. Mental fatigue (when your brain gets tired) has also been shown to be lowered by plants. Students were asked to perform some tasks in their dorm rooms. While the students were working on the task, the view from their dorm window was recorded. The students living in dorm rooms looking out over nature, such as trees and grass, were less mentally fatigued and more productive than those with views of a built environment, such as sidewalks and parking lots.



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## Lowering Pain

Researchers have examined the effects of plants on people with specific health problems. One study showed that people recovered more quickly from surgery if they had a view of trees from their hospital room rather than a view of a wall. These patients, who were experiencing pain, also used fewer doses of strong pain medications if their rooms had a view of trees.

Pain tolerance is also increased in the presence of interior plants among people who are not normally in pain. People were tested in a room with one of three situations: a plain room, a room with colorful non-plant objects added, or a room with plants added. People placed a hand in ice water and were told they could remove it at any time. The percent of people who left their hand in the ice water for five minutes (the time at which their hand would be numb) was recorded. The amount that people that showed discomfort were lower in the room with plants than in the room without plants or the room with colorful objects. This showed that the good of plants are not just because they look nice or their use as a distraction to help keep someone's mind off of the discomfort, because the colorful objects were not as good at changing pain tolerance.





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## Comfort

The good effects of plants on how people physically feel has also been shown. For example, in a study in Norway, workers in an office with leafy plants told of less physical problems, including coughing, hoarse throat, and tiredness, than when no plants were present. Results of a study of elderly residents in an assisted living home who took part in a project to grow indoor plants in their rooms found that they had greater feelings of health after working with the plants.