



Garden Tower: Resource Guide



Since 1978, Green Calgary has been a leading urban environmental charity; empowering Calgarians to green the way they live, work, and play.

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Congratulations on Your New Garden Tower!

We hope you find the following guide helpful as you investigate indoor gardening and vermicomposting through experiential learning. This project could not be made possible without the generous funding provided by the TD Friends of the Environment Foundation.



TD Friends of the
Environment
Foundation

This project embodies small-scale sustainability: the garden barrel has been constructed out of a reused food-grade 45-gallon plastic barrel by cutting slits in rows down the sides of the barrel and opening those slits up for plants to grow out of. The use of the barrel prevented it ending up in the landfill, and the embedded vermicomposting program will also contribute to food waste diversion from landfills. Students will have the opportunity to contribute to this food waste reduction initiative while learning about nutrient cycling, systems thinking, and life cycles. In addition, this project will continue to foster their teamwork, gardening, and critical thinking skills.

If you ever have questions regarding your indoor Garden Tower and vermicomposting, please don't hesitate to contact the Green Calgary team at 403-230-1443, or visit us online at www.greencalgary.org.

A garden tower is a self-sustaining system that requires no weeding, digging, or tilling once the initial planting has been done.

Watering: Due to the low humidity of Calgary, watering will need to take place several times a week, until significant growth is seen. Once the plants start to flourish, watering may need to occur daily to keep up with increased plant volume. Watering may be done in two ways: from the top of the tower, or individually in each of the side pockets.

Appropriate Sunlight: If the garden tower is placed in a room with variable sunlight, the tower will need to be turned in order for all plants to have access to the light. Ensure you plan your garden tower so that plants that require full sun are located closer to the top of the tower.

Checking for Pests: Assess the plant health approximately every week, and look for signs of possible pests. Signs may include yellowing or holes in the leaves or poor overall growth. This may also be a sign of acidic soil, which may have to be mitigated by adding alkaline compounds in order to raise the pH. If you see pests, ensure you deal with them immediately, as infestations can work quickly in small gardens.



A small amount of maintenance will help keep your plants and produce healthy, hearty, and delicious!

A garden tower is a functional mini-ecosystem.

Red wiggler worms recycle organic waste to produce an extremely nutrient rich medium for the plants to grow. In return, byproducts of the plants may be recycled back into the worm cylinder to begin the process of nutrient cycling again. In order to have a functional vermicomposting system, the proper environment needs to be created for the red wiggler worms.

Acceptable worm food

- Fruit and vegetable waste
 - Egg shells
 - Coffee grounds and tea leaves
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Not recommended worm food

- Meat, fish, bones, and dairy products
 - Oily or greasy foods (ie: salads with oily dressing)
 - Highly acidic and spicy food (ie: citrus)
 - Pet waste
 - Bones, cherry pits, onions & ginger
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Recommended method of preparing food and giving food to worms

- Chop into small pieces to accelerate decomposition (the smaller the pieces, the faster they will be processed)
 - Rinse, air dry, and crush or pulverize egg shells before giving to worms
 - Freeze food, as freezing kills unwanted fruit fly eggs and larvae
 - Feed your worms just once a week
 - Ration small quantities and observe rate of consumption
 - Give them less food if there is uneaten food visible after one week (do not overfeed)
 - Increase the amount of food as the worm population grows
 - Always feed the worms under the bedding materials, never on top
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Moisture

- Use a spray bottle to water or moisten the bedding
 - Much of the moisture will be from the fruits and vegetables
 - If the bedding dries too rapidly, place a loose cover on surface of the moist bedding (a sheet of black plastic or damp newspaper or cloth will work well)
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Air and temperature

- Ventilation holes or vents are important to allow air to circulate
 - Worms need air to breathe or else they will suffocate and die
 - Worms can drown when confined under water or in water-saturated soil
 - If excess water collects in the bottom of the bin, remove it with a baster or soak it up with shredded newspaper
 - Worms do well indoors provided that they have enough air, moisture, bedding and food in their bin
 - The temperature range tolerated by red wigglers is around 5 to 27 degrees Celsius (40 to 80 degrees Fahrenheit). However, they are most active between 13 and 25 degrees Celsius (55 to 70 degrees Fahrenheit). Worms will not survive freezing nor will they tolerate high ambient temperatures
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The garden tower can be used to facilitate many forms of learning in a variety of subjects and grade levels. It allows students to expand their teamwork, critical thinking, and innovation skills across multiple competencies.

Grade Level	Curriculum Connections
GRADE 1	<i>Needs of Animals and Plants</i>
GRADE 2	<i>Small Crawling and Flying Animals</i>
GRADE 3	<i>Testing Materials and Designs Building with a Variety of Materials Animal Life Cycles</i>
GRADE 4	<i>Waste and our World</i>
GRADE 5	<i>Science Inquiry</i>
GRADE 6	<i>Science Inquiry</i>
GRADE 7	<i>Interactions and Ecosystems</i>
GRADE 8	<i>Environmental Chemistry</i>
GRADE 9	<i>Biological Diversity</i>

We offer a range of Green Kids' programs that explore a multitude of cross curriculum competencies.

Email Amy amyspark@greencalgary.org or check out greencalgary.org to learn more or to book

Subject	Related Competency
SCIENCE	<i>Plant growth, life cycles of plants and animals, developing & implementing experimental procedure</i>
MATHEMATICS	<i>Measurement, spatial relations, estimations</i>
ART	<i>Labelling, communicating vision & idea generation, design process</i>
LANGUAGE ARTS	<i>Research, writing & communicating results</i>
HEALTH	<i>Nutrition</i>
SOCIAL STUDIES	<i>Food access, community design</i>