



## 25min “Up-cycling” for Urban Farming Grade 9 Facilitator Notes

**Objective:** Students will learn how individuals can improve their food security and take action to reduce waste by re-using materials to create sub-irrigating containers for growing food.



**Recipe Category:** Soil and Composting



**Cooking Time:** 25 mins



**Level of Difficulty:** Grade 9



### **Recipe Ingredients:**

10 empty 10L ice cream buckets  
20 empty small water bottles – or 10 pieces of salvaged pipe  
10 empty yogurt containers  
5 plastic tiles

4 sharpie markers  
4 rolls duct tape  
1 box cutter  
1 piece of cardboard to act as a cutting surface  
1 screwdriver or electric drill  
4 rulers  
4 pairs of scissors



## Curriculum Links:

Grade	Subject Area	Ontario Curriculum Links
9	Geography	<p><i>Human-Environment Interactions</i></p> <p>Relate current lifestyle choices of Canadians to the prospects for sustaining Canada’s economic and environmental well-being (O).</p> <ul style="list-style-type: none"> <li>Describe collective and individual/personal methods used in the community to reduce waste and conserve energy and water (S).</li> </ul>

### Other resources/links/subjects

- Linnaea Farm Ecological Gardening/Permaculture Program on Cortes Island [www.linnaeafarm.org](http://www.linnaeafarm.org)
- Mike Reynolds and the earth ships - <http://earthship.com/>
- Alternatives rooftop garden project in Montreal - <http://rooftopgardens.ca/en>
- FoodShare: [www.foodshare.net](http://www.foodshare.net)
- The Stop Community Food Center: [www.thestop.org](http://www.thestop.org)
- The Toronto Urban Farm <http://www.trca.on.ca/understand/near-urban-agriculture/toronto-urban-farm.dot>
- <http://www.partsandlabour.ca/parks-and-rec> (Katie Mathieu’s project and contact for visits.)

## **Introduction: (5 mins)**

My name is Katie Mathieu. I'm an organic farmer, chef and food security activist. I studied permaculture and organic agriculture at Linnaea Farms ecological gardening program. I've also run 1/2 of an acre of land independently for Michael Stadtlander's award winning Eigensinn Farm restaurant.

This summer I'm in charge of an 1800 square foot rooftop farm in Parkdale for a rock venue/restaurant that is composed of 102 sub-irrigated containers, which has led to a fairly serious preoccupation with the relationship between trash and food security. A sub-irrigated container is a type of planter with a built in water reservoir. When I'm not doing this I'm working as a personal chef, catering music videos and taking courses in medical training and wilderness survival.

*A brief outline of the subject matter for this workshop:*

The workshop involves a conversation about the brighter side of trash – I'm going to talk about how to re-evaluate waste materials as a resource for food production and a demonstration of how to use these materials to build a sub-irrigated container for urban farming. I will talk about the brighter sides of trash and about people who inspired me to think differently about garbage. I will include information about people who make transforming trash their livelihood.

## **Making Sub-Irrigated Gardening Containers In Your Classroom (20 mins)**

- Facilitate a discussion about garbage in Toronto, recycling bin walks/material hunts, and how to clean a container to make it safe for plants and soil. Note how up-cycling allows you to turn trash into a container for growing your own food, improving your own food security!
- Discuss what materials can be used to make a sub irrigated container. Show some examples of materials and ask students to think of some re-used alternatives.
- Explore what materials can be used to create drainage in standard planters.
- Demonstrate how to put a container together. Model this for the students, discussing the role of each piece that makes up the planting container.
- Have students divide into small teams (4-5 people.) Have the teams dig through a pile of (clean) trash to make their own functioning container.

## **Making the up-cycled planters:**

Secure: 1 18L bucket

- 1 Length of pipe – same height as the bucket
- 1 1L yogurt container
- 1 piece of plastic /vinyl tile or similar material that will not disintegrate when immersed in water over a long period of time

Also needed, a cordless drill and ¼ inch drill bit and duct tape

Using a ¼ inch drill bit or something of similar size, punch four holes in the bottom of the yogurt container and then drill eight evenly spaced holes around the base of the container, about an inch above the base. This container will be filled with soil and its purpose is to act as a wick, drawing water from the reservoir through the holes in the bottom and sides and up into the planter.

Next you'll make the water reservoir. Cut your tile to fit snugly into the bucket. The best way to do this is trace the bottom of the bucket onto the tile and then trim the tile circle until it fits neatly into the bottom.

Next cut a diamond shaped hole in the middle of the tile that is slightly smaller than the top of the yogurt container. The point is to have the tile resting in the bucket on top of the yogurt container but not have the hole in the tile be so large that the tile falls past the yogurt container.

Next cut a hole on one side of the tile to align with the pipe. This will be how the water gets into the reservoir.

Put the yogurt container back in the bucket, open side up. Rest the tile circle on top of the yogurt container and measure the height of the circle from the bottom of the bucket.

Remove the yogurt container and the tile. Drill a hole on the outside of the bucket half an inch below the level of the tile to act as an overflow hole for the water in the reservoir.

Place the yogurt container back in the bottom of the bucket and pack it with moistened soil. Rest the tile on top of the yogurt container and insert the pipe into the tile until it is close to the bottom of the bucket but not touching. Tape the pipe to the inside of the bucket to prevent it from making full contact with the bottom of the bucket (preventing water from getting into the reservoir) or cut the end of the pipe that is being inserted on a bias so it cannot fully touch the bottom.

Fill the remainder of the bucket with soil, leaving the last two inches empty. Moisten the soil; fill the reservoir and transplant/plant into the bucket.