



# FACT SHEET: Wicking Beds - Fort Chipewyan

(General)

## GREEN Employment Program

Developed by Greenplanet Energy Analytics for Athabasca Chipewyan First Nation  
with financial support from Athabasca Tribal Council and the Alberta Government AIGEP

### What is a Wicking Bed?

A wicking bed is a type of raised garden bed that sits above ground and is “self watering”. It has a built in water reservoir at the bottom that provides all the water that the plants need for 3-4 weeks.

### How it Works

- In a wicking bed, water travels or “wicks” up from a water reservoir to where the plant roots are.
- Some wicking beds have a reservoir full of gravel or other media which acts in the same way that a sponge works when soaking up water; the bottom of a sponge “pulls” water up from the counter top.

This is known as “capillary action”.

- Some wicking beds don't use media, they just have a way to hold the soil above the water reservoir and some form of wick (soil, fabric, etc.) to pull the water up.



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### Basic Design

A wicking bed is made up of:

- A container - often made of wood but other containers are possible (like food grade plastic bins or IBC totes for large scale.)
- Waterproof liner, if needed.
- PVC pipe that extends from the surface of the soil and down into the water reservoir. (You can also use flexible perforated drain pipe for larger projects.)
- Washed gravel to fill the water reservoir - 4" or more depending on the size of the bed. You can also use plastic containers instead of gravel to suspend the soil.
- Landscape fabric laid over the gravel.
- Above the fabric goes 20-35 cm of soil.
  - The layer of soil should not be too deep otherwise the water may not wick far enough from the reservoir.
  - Use a balanced soil mixture; 66% peat moss/vermiculite mix (seedling starter) and 33% compost (if using indoors, purchase the compost to avoid insects.)
- A bulkhead fitting (drainage hole) inserted into the side of the box so it is level with the top of the water reservoir.

**Capillary Action** - the ability of a liquid to flow in narrow spaces even against gravity. It is caused by the attraction between the molecules of the liquid and the solid. These forces are weak so the space has to be small.



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The effect can be seen when water is pulled up into a paper towel.

This is also how living cells can move liquids like plants pulling water up from their roots.



Water via standpipe

Water wicks up from the gravel reservoir and into the soil via capillary action

Water exits via bulkhead when reservoir is full (stop filling!)



**Easy to Use + Low Cost**  
**Conserves Water**  
**Water Once Every 2-3 Weeks**  
**Use Outdoors and Indoors**

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## Benefits

- Ease of Use
  - To fill the reservoir, simply pour water down the pipe.
  - Stop filling the reservoir when water begins to exit from the bulkhead/drain fitting.
  - You will only need to fill the reservoir once every few weeks depending on the size - "Vacation safe".
- Low maintenance, add mulch so no weeding
- Uses less water than traditional gardening
- No electrical parts



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## What is Easy to Grow

- As with any form of growing, herbs and leafy greens are the easiest to grow in a wicking bed.
- Root crops and fruiting crops can also be grown.
- Beets and tomatoes are easy varieties to begin with.

## Indoor Wicking Beds

- Wicking beds can be used indoors during winter or all year round if you do not have access to an outdoor growing space.
- If you would like to make your wicking bed portable, you can add wheels or just use smaller containers.
- If you are using your wicking bed during the winter or do not have access to a bright window in summer, you will likely need a "full spectrum grow light".
  - Construct a framework to support the lights above the bed. Strip lighting is best.
  - Determine how many lights you need; low light plants generally refers to leafy greens and high light plants refers to fruiting crops (tomatoes, peppers).
  - LED grow lights give maximum light for minimal energy.



## Using a Wicking Bed

- In order to "activate" wicking action you will need to pre-soak your soil before filling the water reservoir.
- Add fertilizer to your wicking bed approximately every 2-3 months (after each harvest of crops). Generally

speaking, a handful of organic compost per square foot and one tablespoon of all purpose slow release organic fertilizer per square foot should do. (Avoid using synthetic fertilizers - they harden the grow mix over time.)

- Bugs can become a problem with any form of indoor growing and you will need to frequently inspect your plants for plant pests such as aphids.

## More Ideas

A DIY Guide to Wicking Beds - Permaculture Research Institute  
<https://www.permaculturenews.org/2011/06/20/from-the-bottom-up-a-diy-guide-to-wicking-beds/>



How to Make DIY Water-Efficient, Wicking Beds With Upcycled Materials - One Green Planet

<https://www.onegreenplanet.org/lifestyle/diy-water-efficient-wicking-bed-upcycled-materials/>



Build Your Own Self Watering Containers - Grow a Good Life

<https://growagoodlife.com/constructing-18-gal-self-watering-containers-swc/>



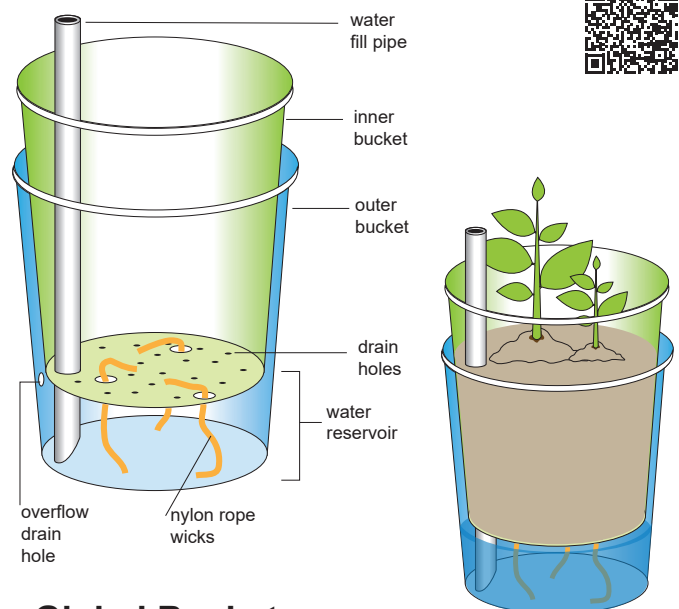
**Video:** Building a self watering container - BalconyGrow

<https://www.youtube.com/watch?v=3lNoLKg555w&t=5s>



**Video:** How to make a Global Bucket

[https://www.youtube.com/watch?v=AXEgJXec\\_Zk](https://www.youtube.com/watch?v=AXEgJXec_Zk)



## Global Bucket using wicks

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