



Figure 1: Current compost bin

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VERMIDRAWER

FOR ALLAN GARDENS

A Luminescent Solution to Vermicomposting

02

Current Process For Soil:

Screening

- 1) Lift compost bin, **soil poured on mesh.**
- 2) Push/shake screen to separate soil extract and retain worms

Light Method

- 1) Open the lid to shine bright light on surface of soil
- 2) Worms burrow down
- 3) Soil is slowly scooped from the top layer, process is repeated

For Worm Tea:

nutrient-rich compost water

Grey compost bin filled with soil is lifted to extract worm tea in the blue bin.

01

What is VermiDrawer?

A portable compost bin that **reduces** the **time** and **physical effort** required for extracting soil and worm tea

03

WHAT IS THE OPPORTUNITY?



Most volunteers are seniors



Bins are 16-22kg, causing difficulty when seniors lift them when collecting for worm tea



Workers estimate it taking 1h/L to separate worms from soil

Aim: Streamline and minimize the time and physical exertion required.

04

What are our objectives?



Time - Efficient

Minimising time taken allows more time in other work

Usability

Ease of use for users of all age and expertise



Worm Safety

Minimise harm to worms

Soil Condition

Ensure the design does not alter the soil condition



Sustainability

Able to use for prolonged period in the given environment

05

VERMIDRAWER



Durable plastic used throughout the design

Blue LED Light strip

Attached to the sides of the drawer for modified light method.

Buzzer
Alerts users with music when finished

4 Buttons

1. Set to alter sec/min/h
2. + time
3. - time
4. Press to start timer

16 Airholes
around the slide-out drawer

0.1 mm hole mesh
Holes allow worm tea to fall to bottom bin while leaving the soil on the top

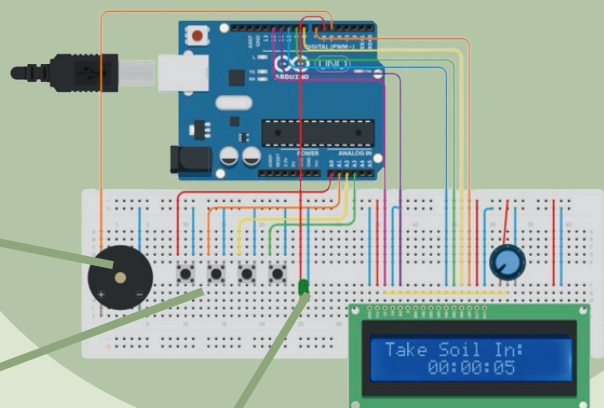
Slide-up Watering Drawer
Easy access to worm tea through pulling the base to bring water bin up to level.

Water Bin
Worm tea is collected here

Wheels
Allow portability

Timer on Slide-out drawer

Covered in PVC for waterproofing. Users set the timer for the duration of LED light strips.



LED light bulb
Lights up when activated

Display Timer
Display time left until the worms finish moving to desired location

Dimensions

(length x width x height)

slide-out drawer:

24 inch x 8 inch x 12 inch

slide-up drawer:

24 inch x 8 inch x 12 inch

06 Minimise Physical Effort and Time

proxy test revealed 96% decrease in the force required to extract worm tea

96 %

min
51s

amount of time required for worms to move from the starting point to half point, based on calculation

08 Recommendations & Next Steps

We recommend "VermiDrawer" - but next steps should be done for implementation.

Verify with worms

-> Verify worm response to blue LED lights relative to their location

Improvements for Prototype

-> Make it more compact

-> Explore alternate methods for raising tea drawer

ALIGNS WITH COMMUNITY VALUES

Visually Appealing

Minimise time spent on basic tasks

Ensure well-being of worms

Inspiring Community