

# **VERTICAL AGRICULTURE, WINDOW GARDENING WITH MANUAL IRRIGATION RESERVOIRS. A COMPARISON OF SOIL AND HYDROPONICS BEADS.**

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Our project involved a collaboration between four RDSB schools (using G-Suite Apps). The attached PDF file provides a detailed description of our efforts. The general purpose of the project was to promote innovation, sustainable water use, and the recycling of materials via the creation of vertical gardens. Students from each school shared their experiences, results and future plans for their vertical gardens with their partner schools. Students also learned about how healthy gardening can be made accessible to all, regardless of what type of housing they reside.

Individual schools added their own variations to the project. Some focused on making the garden mobile, and one focussed on chemical testing (ph and nutrient levels) of their hydroponic fluid. My students compared the use of soil, water, and limited amounts of plant food, to the use of hydroponic beads and hydroponic fluid.

In the end, both styles of gardening produced good crops of basil and lettuce. However, there were some differences:

- the hydroponic beads tended to dry out more when left over the weekend;
- the soil based gardens drained slowly; each garden in its column had to be watered individually; over time, water did reach the reservoir where it was reused.

## **Next Steps:**

- improve irrigation and reduce fluid loss (splashing off of the plant leaves) in the hydroponic systems by creating a wick or other medium that will direct the flow of irrigation fluid around the plant and onto the beads as it travels from one level of the garden, down to the next;
- develop a main reservoir with distribution lines, for the hydroponics based systems, that will allow a pump to continually send nutrient rich fluid to the gardens.



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(http://stao.ca/files/vertical-agriculture-window-gardening-with-manual-irrigation-reservoirs-a-comparison-of-soil-and-hydroponics-beds.pdf)  
https://connex.stao.ca/sites/default/files/vertical\_agriculture\_window\_garden\_with\_manual\_reservoir\_irrigation\_system.pdf

## RESOURCES

- Vertical Agriculture, inexpensive fresh produce for all through pop bottle window gardening.  
([https://connex.stao.ca/sites/default/files/vertical\\_agriculture\\_window\\_garden\\_with\\_manual\\_reservoir\\_irrigation\\_system.pdf](https://connex.stao.ca/sites/default/files/vertical_agriculture_window_garden_with_manual_reservoir_irrigation_system.pdf))

## ELEMENT

- Inquiry (/expert-elements/inquiry)



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