Our work hypotheses:

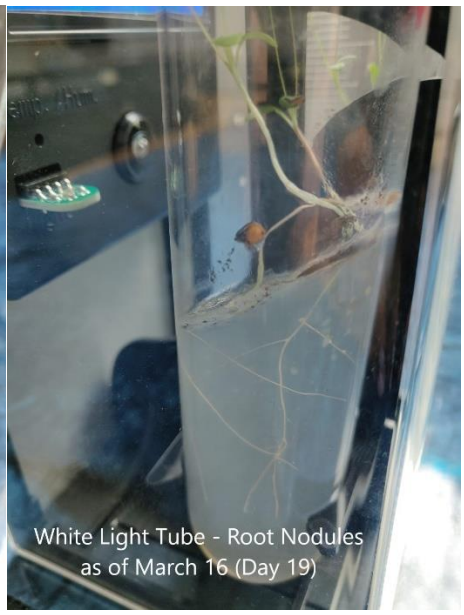
- 2 tubes with Rhizobium inoculum (the amount listed in the official protocol), illuminated with magenta and respectively white light. Using sensors, we measure temperature, humidity, light intensity and CO2 concentration.
- Separately, other 2 tubes with:
    - double amount of Rhizobium
    - normal quantity of Rhizobium, but a different magnetic field:
        - Normal B (30 microTesla) and double B

Observations:

School ExoLab:

- The first root nodules appeared at the plants in the magenta-illuminated tube 14 DAP and then in the tube with white light. Our most recent pictures taken at school show a maximum number of five nodules at seedling L1 (Magenta light). Unfortunately, in the tube illuminated with white, one of the plants stopped from evolving due to contamination.
- *GERMINATION:* The plants at school germinated during the 48-hour dark period, but I closely analysed my plants at home and came to the conclusion that the first sign of germination was the change of appearance of the seed and also that a little white "stem" appeared.
- *RADICLE:* The radicle emergence occurred during the 48-hour dark period.
- *COTYLEDONS:* The cotyledons emerged on March 2, meaning about 5 days after planting.
- *ROOT NODULATION:* The roots are no longer a single taproot, they are becoming more complex and, as I mentioned before, the first nodules have appeared. [see pictures below: left-magenta light, right-white light]. The first complex root branches with nodulation appeared 2 weeks after planting.

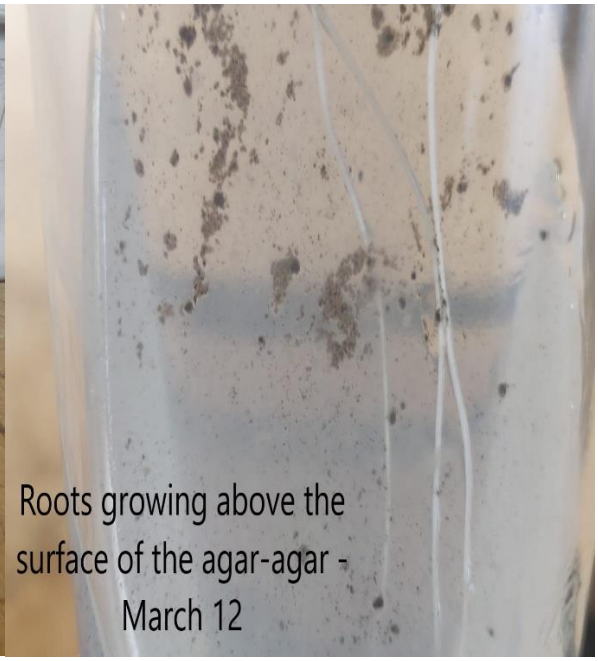

Magenta Light Tube - Root Nodules as of March 16 (Day 19)


White Light Tube - Root Nodules as of March 16 (Day 19)

- *SINGLET LEAVES:* The singlet leaves emerged between March 5 and March 7, depending on the plant, meaning 8-10 days after planting (February 25).
- *FIRST TRIFOIL:* The first trifoil appeared between March 12 and March 16 (15-19 DAP).

Hypothesis #2 - Double Rhizobia:

- The plants with double the amount of Rhizobium have the roots on the surface of the agar-agar, not inside. We didn't observe any nodules momentarily.

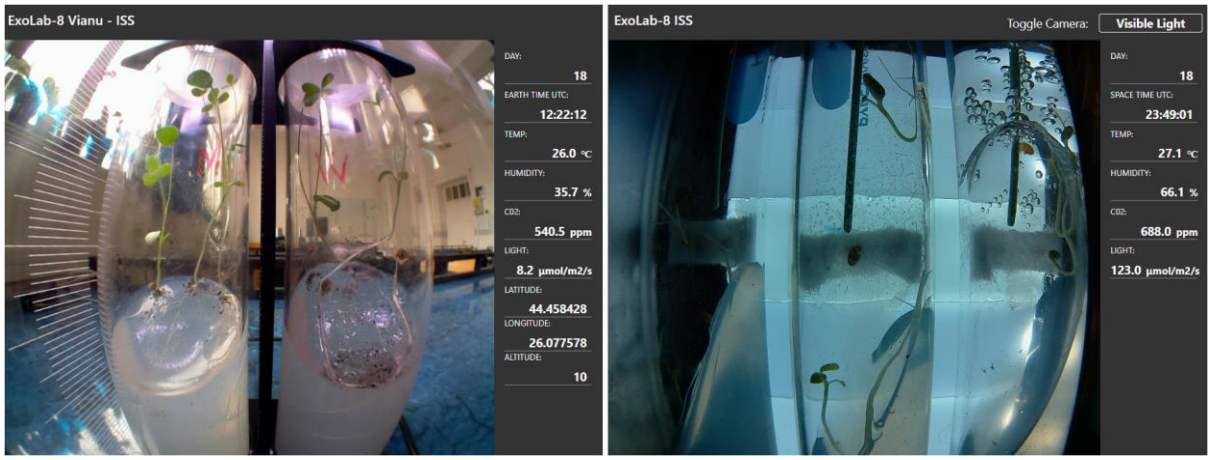


Hypothesis #3 - Magnetic Field:

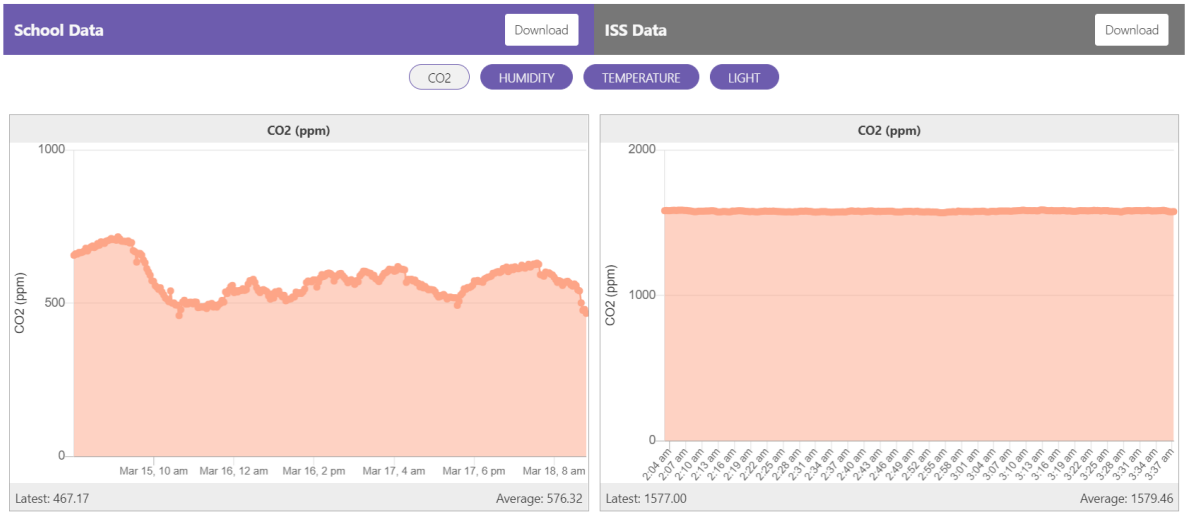
- In the tube with a big magnetic B, one of the plants is not growing vertically, the stem actually makes a loop. Also, one seed didn't germinate. We have not observed any nodules yet.

Comparison to the seedlings on the ISS:

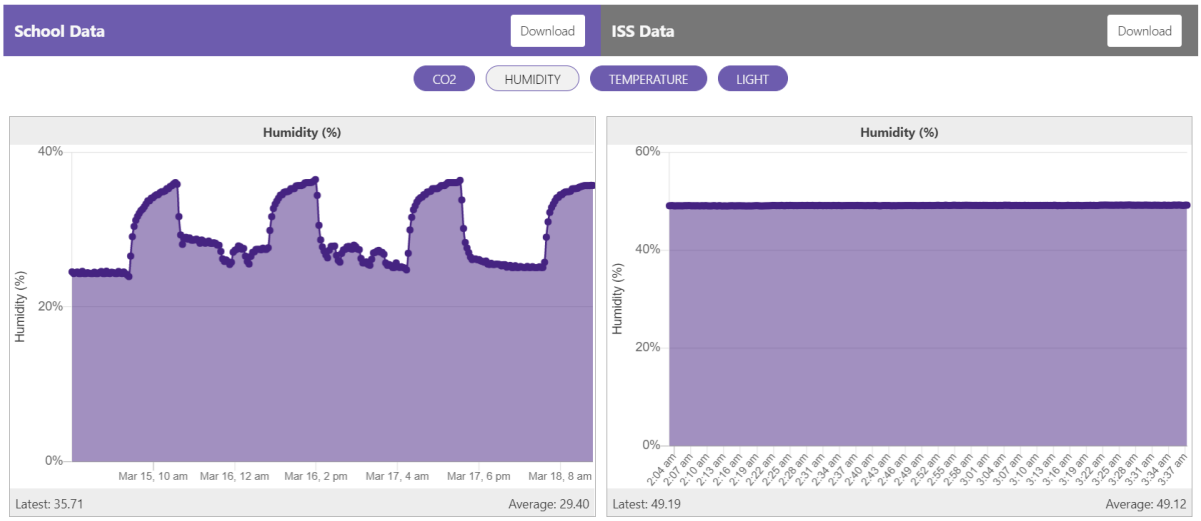
Growth:



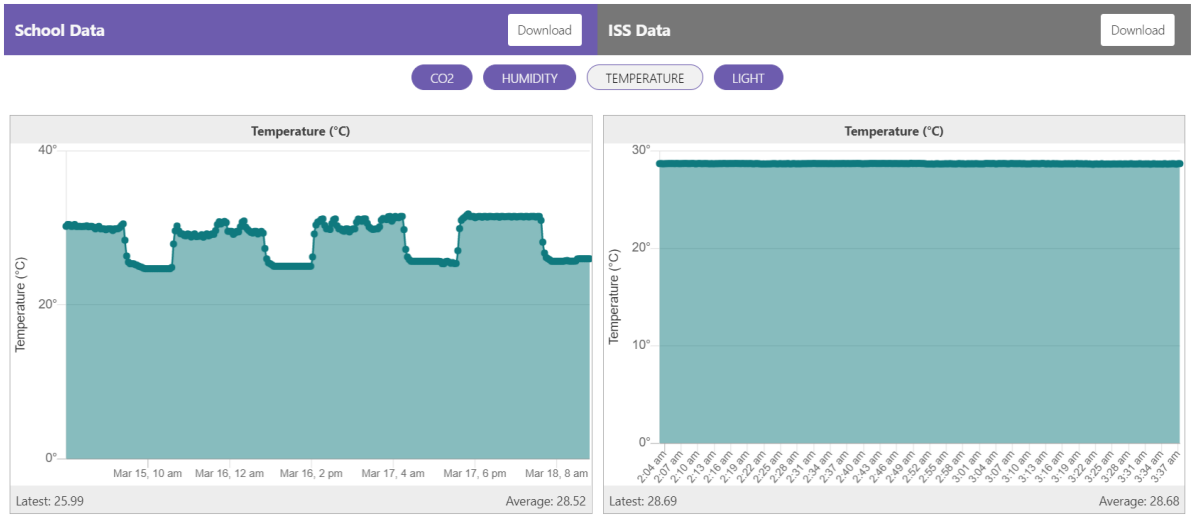
Carbon Dioxide:



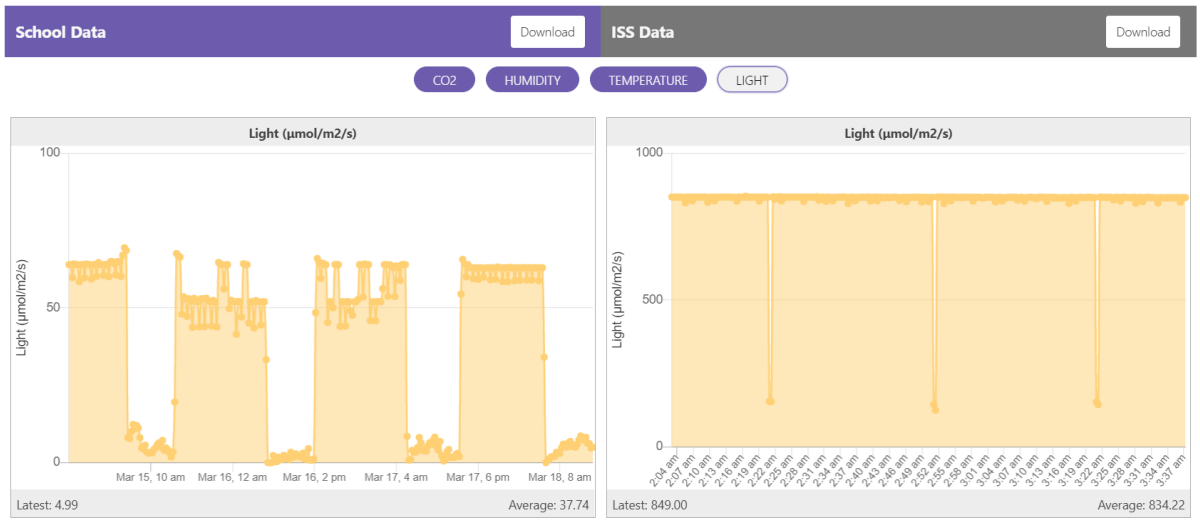
Humidity:



Temperature:



Light:



For daily observations, weekly sketches, comparisons to the plants on the ISS, weekly summaries and conclusions, our interactions with the Magnitude.io livestreams & a wider gallery of all our work hypotheses both at school and at home, please feel free to visit our website at https://vianuprojects.com/p10_2021-exolab-8/ !