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Author: Dr. Thieme Hennis

Netherlands Antilles

# ASTROPLANT: ENGAGING A NEW GENERATION OF URBAN AND SPACE FARMERS

**Abstract**

AstroPlant is a citizen science project and DIY plant lab kit to monitor plant growth for plant characterisation of a large number of plant species and cultivars for MELiSSA's higher plant compartment. MELiSSA builds technology for a closed-loop regenerative life support system for long duration space missions. The open source kits - on varying location across the world - generate publicly available data about plant growth under these varying environmental circumstances. AstroPlant is in the process of engaging citizen scientists and schools to purchase or build the AstroPlant kit to learn about plant growth and to enable them to conduct plant experiments.

The kit's designs are publicly available online and the technologies are built and maintained the AstroPlant open source community. Overall development and roadmap is coordinated by Border Labs, the MELiSSA consortium, and the European Space Agency.

After four prototypes, we've now started a first educational citizen science project with the St. Barbara College in Ghent, where a group of 5 students work on the influence of far-red on soy plant growth as well as building an extension for controlling temperature. There is global interest for AstroPlant, and we expect to implement another 10-15 kits in the first months of 2018 (at schools, urban farms, and other places). ESA Education is also involved in building a first educational program for younger children (8-15 yrs).

AstroPlant is as much a science project as an educational project, and is developing intuitive user and learning experiences to effectively convey the various educational themes represented by the kit: space exploration, circular systems design, ecology and biology, plant science, (open source) hardware design, automation and electronics.

Our presentation would highlight the initial outcomes of the AstroPlant project, in particular focusing on the different pedagogical approaches (participatory and open pedagogy vs direct instruction). It will also detail our technical approach to capturing plant data in a standardised manner as well as the approach for reading out 'recipe data' in order to control plant-growth or other environments.

It will also include an interactive part to receive feedback from the IAC community (on the technologies involved, protocols, cultivar selection, and more).

More information on AstroPlant can be found on the website astroplant.io. Our documentation is available on WeVolver (hardware) and Github (software).