**Requirements v1 03/Oct/2021**

All requirements marked on the MoSCoW scale (**M**ust have, **S**hould have, **C**ould have, **W**on’t have)

**Ariadne robot requirements**

|  |  |
| --- | --- |
| Be at least twice as quick (from the crew’s point of view) than if crew had to carry out manually | M |
| Be able to automate seed sowing | M |
| Be able to pick up seeds | M |
| Be able to position seeds precisly | S |
| Be able to attach strings to seeds | M |
| Be easy to clean/sanitize | M |
| Be able to manipulate and load seeds autonomously | M |
| It must be possible to load seeds manually | M |

**Growpod requirements**

|  |  |
| --- | --- |
| Be easy to clean/sanitize | M |
| Be able to provide correct lighting conditions for growth | M |
| Ebb/flow fogger or water system to ensure that roots are not permantely wet | M |
| Leaves must stay relatively dry | M |
| System must keep track of planting, growth | S |
| Recommend when to harvest particular threads | S |
| Be able to autonomously devise and conduct planting experiments to maximise usage of the system | C |
| Respond to crew feedback | C |
| Be able to be programmed by ground control | M |
| Be space efficient when stowed | M |
| Be light | S |
| Be power efficient | M |
| Stay within plant heat parameters | M |
| Be able to grow microgreens | M |
| Be able to provide correct moisture levels to seeds | S |
| Be able to provide correct moisture levels to seedling/microgreen roots | M |
| Be able to provide correct nutrients to plants | M |
| Be able to grow microgreens for at least 3 weeks | M |
| Be able to collect data on plant growth including imaging | M |
| Seeds should be able to sprout from seed cubes | M |

**Software requirements**

|  |  |
| --- | --- |
| Be able to display internal state and plant state to crew and ground control | M |
| Be able to keep track of individual plants | S |
| Be able to devise and carry out planting experiments | S |
| Be able to gather data and transmit to ground station | S |
| Be able to interact with the crew via voice interface | C |
| Be able to instruct crew which particular threads are ready for harvest | C |
| Be able to predict when particular harvests will be ready | C |