



Growing Beyond Earth® Trial 2 Proposal

Research Question (100 Characters):

Was it the space that caused the basil to stop growing, and have stunt growth?

Hypothesis (100 Characters):

If we provide more space for the individual cultivars, then the basil's growth rate would increase.

Justification – What inspired you to do this experiment? (100 Characters):

We were surprised by the significant difference in the growth - in size - of the nasturtium mix plant and the Genovese basil. We have observed that the nasturtium biomass was significantly higher.

Total biomass of one Nasturtium plant was 85.5 g and the biomass of one basil plant 0.4 g. This experiment should show us if the main limiting factor for such a huge difference was space and overcrowding of the growth chamber. We have two chambers, so one chamber will grow nasturtium (6 pots) and the second chamber will grow basil only (6 pots).

Variables (40 Characters Each)

Independent: space for the plant

Dependent: growth, biomass increase

Materials: bulleted list (900 Characters)

We will use the same materials as in Trial 1, so the only change to our experiment is the space provided to the basil plant.

Explanation of Methods (1650 Characters):

We will follow the same protocol as in Trial 1, the changes implemented to trial 2 are separate

growth chambers for individual cultivars basil and nasturtium. The trial will run 5 weeks only. We noticed during Trial 1, that the nasturtium after a fifth week started to deteriorate, older leaves were turning yellow and dry. Potential solution to this issue might be continuous harvesting. Fertilizer, watering, and photoperiod will all stay the same.

References (450 Characters):

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3119620/>

<https://www.weekand.com/home-garden/article/happens-plants-planted-close-together-18065014.php>

It is well known by farmers and small scale farmers, that planting seeds too closely will result in poor harvest, plants have to compete for space, nutrients, and light exposure.