

# **AN EXPERIMENTAL SETUP FOR ASSESSING LIGHT AND MINERAL NUTRITION EFFECTS ON *ARABIDOPSIS THALIANA* HEYNH. PHENOTYPE**

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## **Abstract**

Being able to quantify the phenotype is very important, especially in relationship with the genetic background or the environment. Our research article tested an experimental setup for its ability to analyse the influence of light quality and nitrogen availability on the phenotype. For this purpose, *Arabidopsis thaliana* plants were grown in specially designed hydroponic setups placed in custom made light boxes and were analysed using imaging and image analysis techniques. Parameters for growth (projected rosette area, absolute growth rate, relative growth rate) and parameters for general morphology of the plant (compactness, stockiness) were assessed. Plants grown in red light achieved higher projected rosette area, but were more sensitive to changes in nitrogen concentration, while plants grown in blue light developed a smaller surface area, but were less sensitive to changes in nitrogen concentration. Compactness and stockiness were strongly influenced by light quality, having higher values for plants grown in blue light. Nitrogen concentration did not influence compactness or stockiness parameters. Overall, the experimental setup and the methodology presented were robust and precise enough to produce good quality data and to allow the identification of both obvious and not so obvious effects of environmental factors on plant phenotype.

**Key words:** light, nitrogen availability, image analysis, phenotype

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