

Use of reflectance sensors for nutrient management in controlled environment agriculture

Aim of the research project

The main goal of the research project is the definition of alternative methods for nutrition management in controlled environment agriculture. Reflectance sensors for the definition of threshold values for vegetable crops will be tested. This research project is implemented within the framework of an agreement between the Department of Agricultural and Food Sciences (DISTAL) of Bologna University and the company Horticolas that operates in the sectors of production and selling onions, potatoes and other vegetable products.

Planned activities

The current research project requires an initial phase in which the candidate will review the existing literature regarding the cultivation of onions in soilless systems and the morpho-physiological effects that different conditions (e.g., temperature, relative humidity, light, nutrition) have on their development. Next, the candidate will be asked to plan the experimental trials and organise their management.

The trials will be specifically dedicated to the development of protocols in which reflectance sensors will be used for managing plants nutrition.

The candidate will select which kind of parameters (morphological, physiological and biochemical) should be evaluated during the test, also in an optic of optimization of resources use efficiency (e.g., water and nutrients).

The candidate is required to have agronomic and statistical skills, as well as the capacity of experiments' management. A good attitude to teamwork, self-organisation and problem-solving skills are required.

Fluency in the English language is a prerequisite for the candidate, together with knowledge of Italian and Spanish.

Location of activities

The candidate's assigned locations will be the offices of the Department of Agricultural and Food Sciences (DISTAL) and the laboratories located there (e.g., greenhouses, climate chambers, vertical farm, analysis laboratories), as well as the experimental facilities at the Cadriano (Granarolo dell'Emilia, Bologna) experimental centre.