



FIRROBOT

NEW GENERATION PHENOTYPING

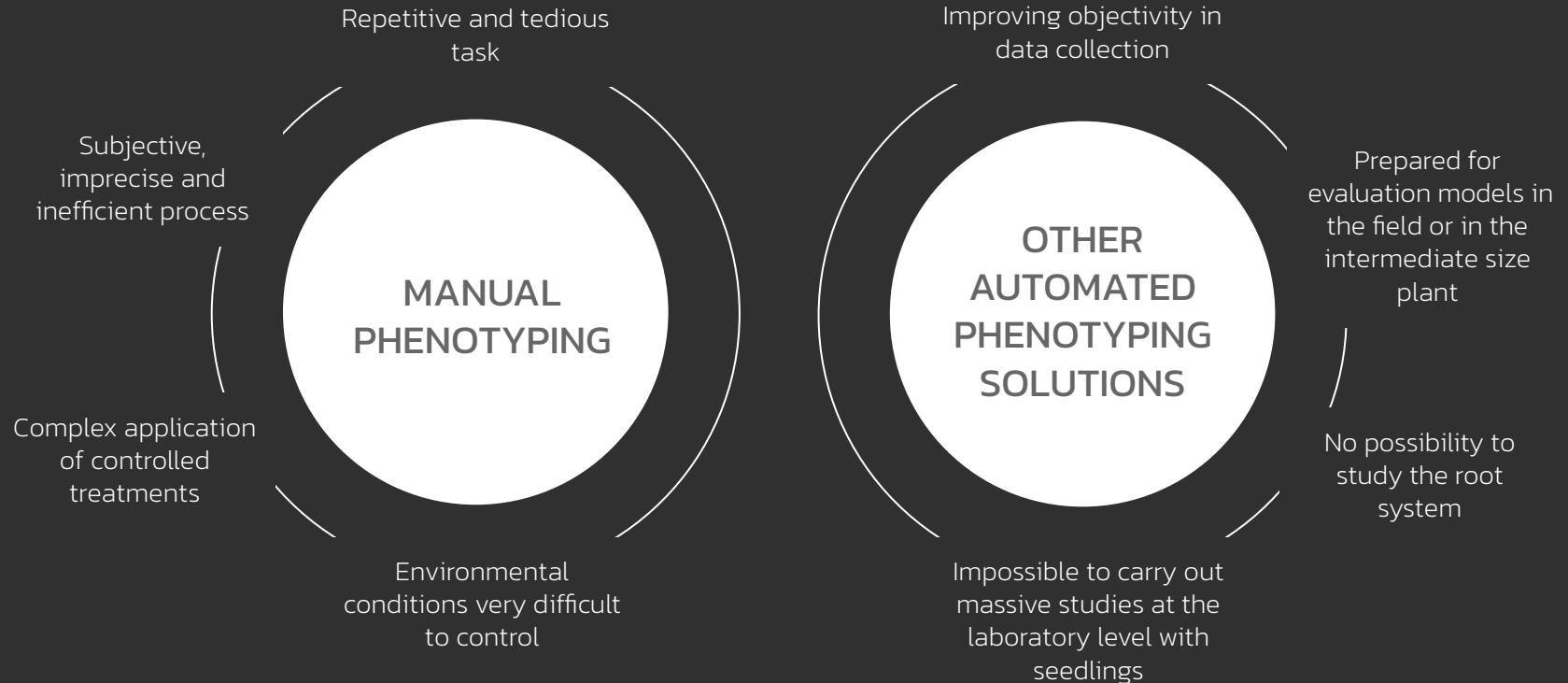


AUTOMATED SYSTEM FOR
MASSIVE PLANT PHENOTYPING

Plant Biotech Division **Beyond Seeds Biotech Group**

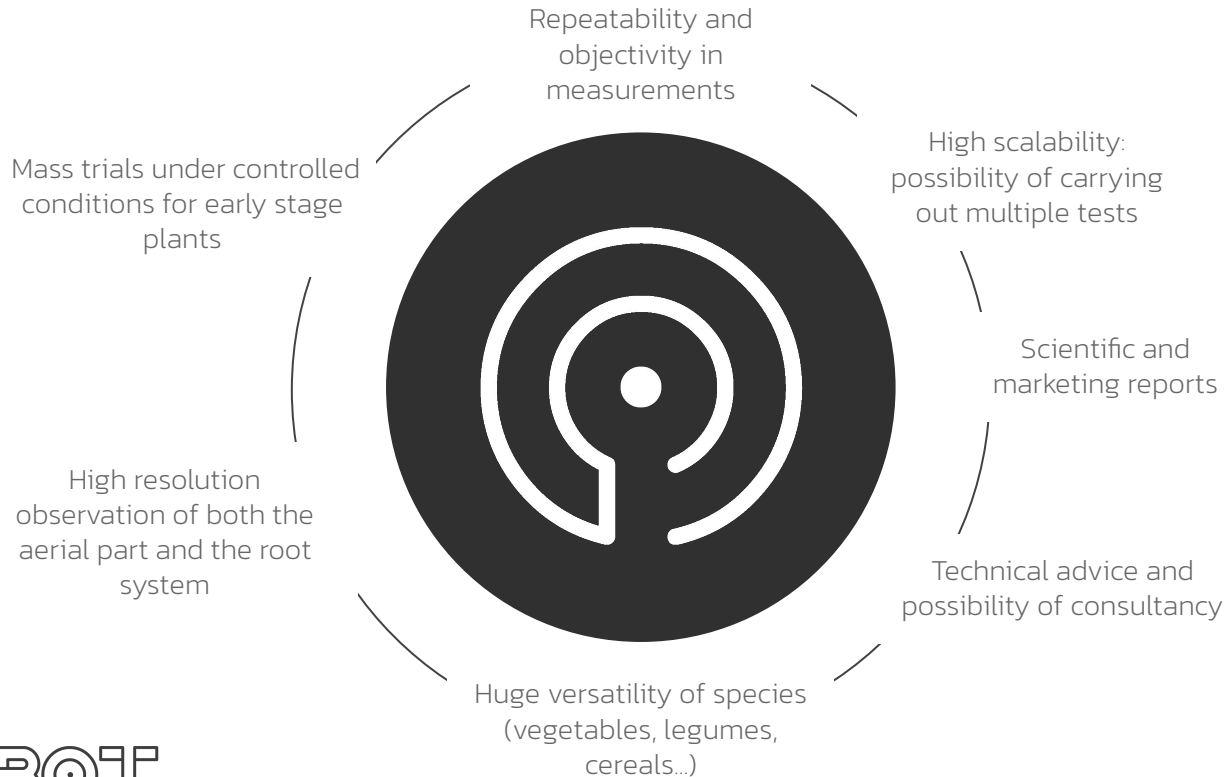
PHENOTYPING

OBSERVATION OF GENETIC CHARACTERISTICS MANIFESTED IN AN INDIVIDUAL



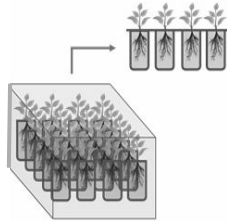
FITOBOT

NEW GENERATION PLANT PHENOTYPING

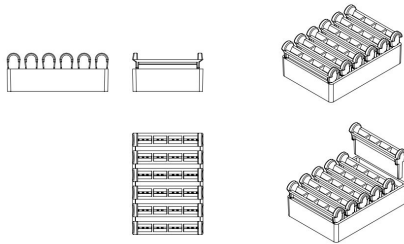


FITOBOT CONFIGURATION

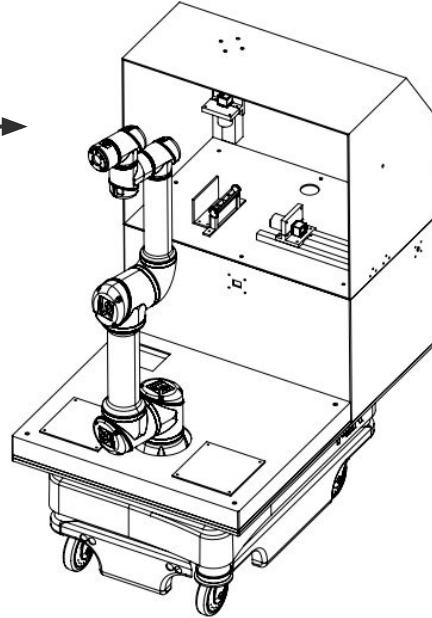
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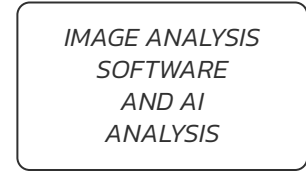
Phenotyping station with the cultivation of plants and application of treatments



System of phytostrips and phytoplates



Taking pictures



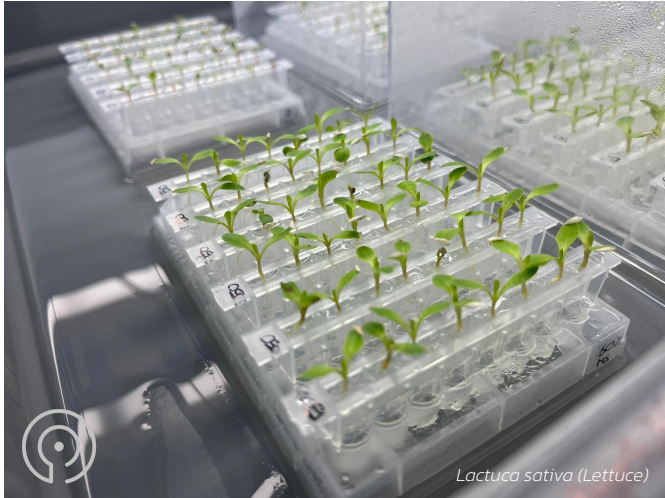
Information storage and user access



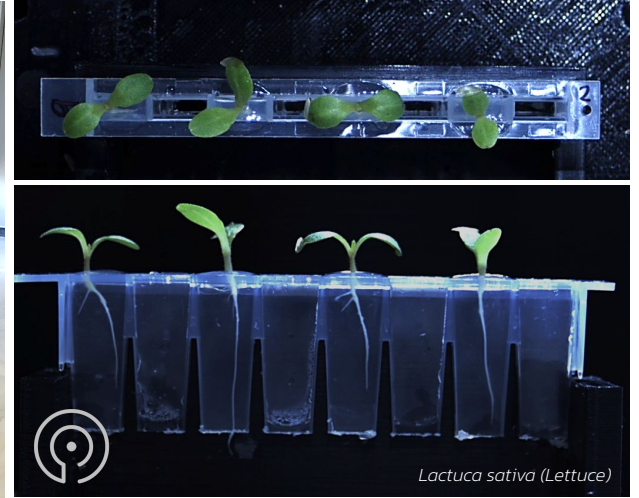
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PHENOTYPING PROCESS

NEW GENERATION PLANT PHENOTYPING



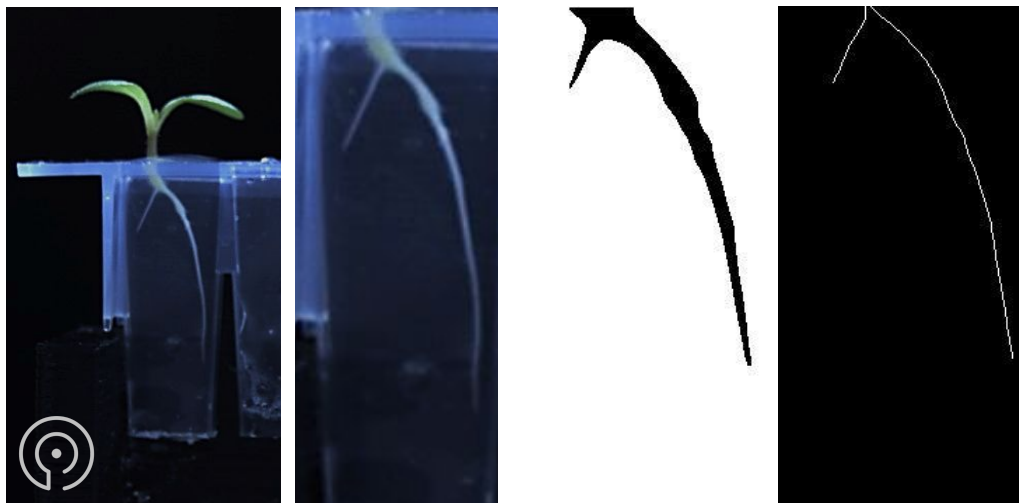
Phenotyping station with the cultivation of seedlings and application of treatments in the phytostrips arranged on a nutrient solution or stress condition that need to be evaluated.



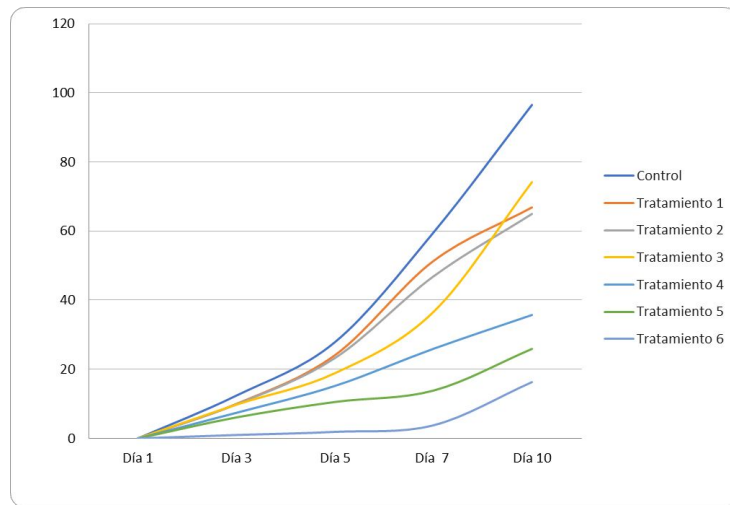
Fitobot moves to the phenotyping station where the collaborative robotic arm takes each of the phytostrips and places them in the data acquisition unit to take overhead and lateral images of each of them.

PHENOTYPING PROCESS

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The image analysis software identifies the root structure, recording its daily development. On the other hand, it identifies the aerial part and records the leaf development as well as the elongation of the internodes and the color of leaves.



Finally, the analysis module analyzes all the data and images, returning customizable lists and graphs with all the statistics of the development rate of the plants and each of their organs under the specific experimental conditions.

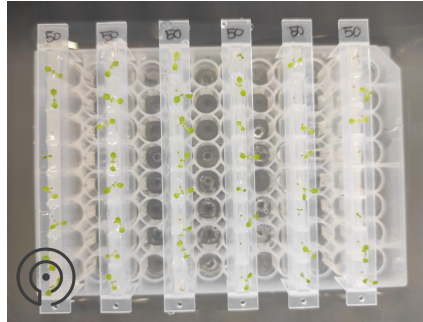
TECHNICAL FEATURES

NEW GENERATION PLANT PHENOTYPING

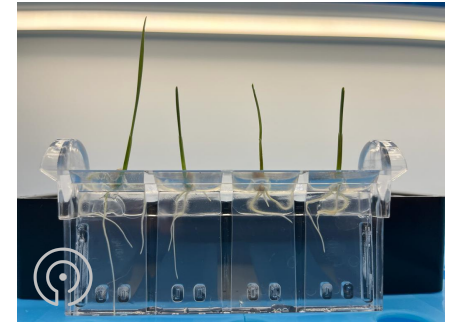
FITOBOT SERVICE CHARACTERISTICS

Speed	400–800 plants/hour*
Test quantity	Thousands of plants*
Maximum time	1 month (until true leaves)
Plant species	Vegetables, cereals, legumes...
Phenotypic parameters quantifiable	Root length and surface Stem length and architecture Leaf area and its color

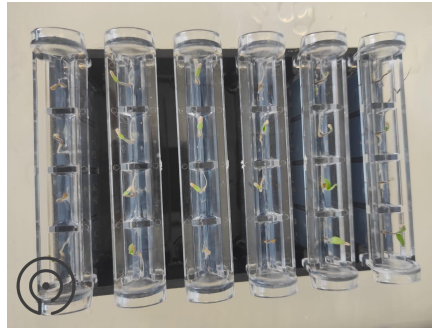
* Depending on the species to be analyzed.



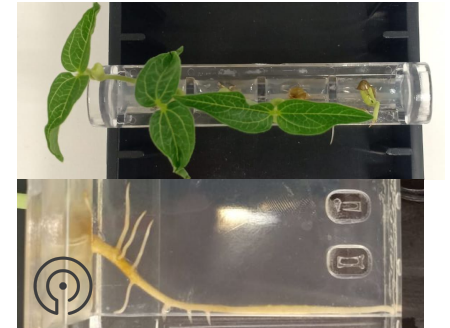
Arabidopsis thaliana (Arabidopsis)



Triticum aestivum (Wheat)



Solanum lycopersicum (Tomato)



Glycine max (Soy)

MAIN APPLICATIONS

NEW GENERATION PLANT PHENOTYPING



AGRICULTURAL INPUTS ASSESSMENTS

Comparative tests to determine the effectiveness of a certain biofertilizer, herbicide or other type of input on plants. Phytotoxicity tests and possibility of physicochemical analysis of the response to inputs on the plant.



BIOTIC STRESSES AND SOIL DISEASES

Tests to measure the resistance in early stages of plants in the presence of infectious agents of the soil: fungi, bacteria, nematodes.

MAIN APPLICATIONS

NEW GENERATION PLANT PHENOTYPING

A red circular graphic, partially open on the right side, framing the text 'ABIOTIC STRESS'.

ABIOTIC STRESS

Tests to measure the **tolerance** of plants to cultivation conditions with **high levels of drought, salinity, temperature and humidity**, among others.

An orange circular graphic, partially open on the right side, framing the text 'GERMINATION TESTS'.

GERMINATION TESTS

Evaluate the **effectiveness of coating or priming treatments**. Compare germination rates between varieties.



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For further information visit
www.fitobot.com

seeds4i
PLANT BIOTECH DIVISION

Neotec 2020 Initiative project financed by the CDTI
belonging to the Ministry of Science and Innovation



Agronomic Engineering · Software · Plant Biotech · Nanotechnology · Microbiology · Biopharma



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