

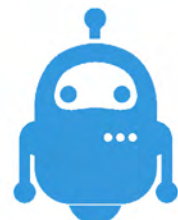
# PHENOMOBILE V2



**PHENOTYPING**



**USER FRIENDLY**



**AUTOMATIC**

**Robopec**

[www.robopec.com](http://www.robopec.com)

**hi-phen**  
INTEGRATED PLANT PHENOTYPING SYSTEMS

[www.hiphen-plant.com](http://www.hiphen-plant.com)

**INRA**  
SCIENCE & IMPACT

[www.inra.fr](http://www.inra.fr)

**MECA**  
3D

[www.meca-3d84.com](http://www.meca-3d84.com)

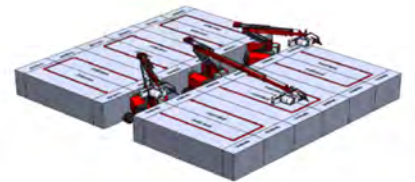


# MAIN CHARACTERISTICS

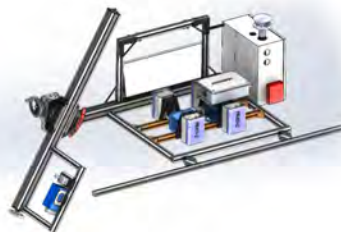
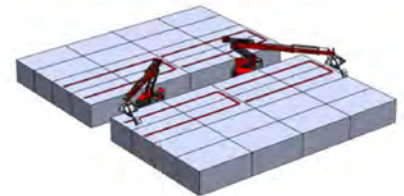
## PHENOMOBILE-V2

is a fully automatic unmanned vehicle specifically designed for high-throughput field **phenotyping**

→ The system is designed to run along alleys that are 2.5m width. The telescopic boom that can reach **12m length** and can move in all the directions. The height of the measurement head is automatically adjusted from **1.0m up to 4.5m**



→ The phenomobile moves automatically over the micro-plots following predefined trajectories within a few centimeters accuracy using a RTK GPS positioning



→ The main sensors of the **measurement head** are :

- 3 Sick LMS400 Lidars
- 2 RGB Cameras
- 5 Flashes LUMIX FR60
- 2 RTK GPS
- 2 IMU (SBG Ellipse)
- 1 Windsonic Anemometer



**The measurement head can easily host new sensors**

Weight : 7.85t  
Width : 2.46m  
Length : 5.2m  
Height : 3.15m  
Maximum speed : 12km/h  
Autonomy : 10h  
Turning radius : 3m

- Diesel engine powering the hydraulic and electric systems
- 4 steering-powered caterpillars
- Airconditioned cabin
- Throughput : >100 microplots/hour
- Caterpillars minimize damages on the soil



# SUPERVISION SOFTWARE

## CONFIGURE AND MONITOR

with a user friendly software. Create measurement waypoints, create microplots, manage your maps or define the vehicle trajectory. Then monitor the mission.



### Mission planner software



Create your mission and customize all your parameters, configure the sensor head



→ configure and create your missions on Windows or Linux systems

### Define your maps

Create the microplots, add the obstacles or import geotiff to display on the map



### Create trajectories

Generate the vehicle trajectory and the boom movement patterns over the measurement plots



### Live Monitoring

- real time feedback, monitor your vehicle and the mission progression
- supervision software running on tablet
- remote control the vehicle
- web supervision through 4G



### Configure

define your hardware, create measurement scripts and create your maps

### Plan

choose micro-plots, plan robot path and configure measurement

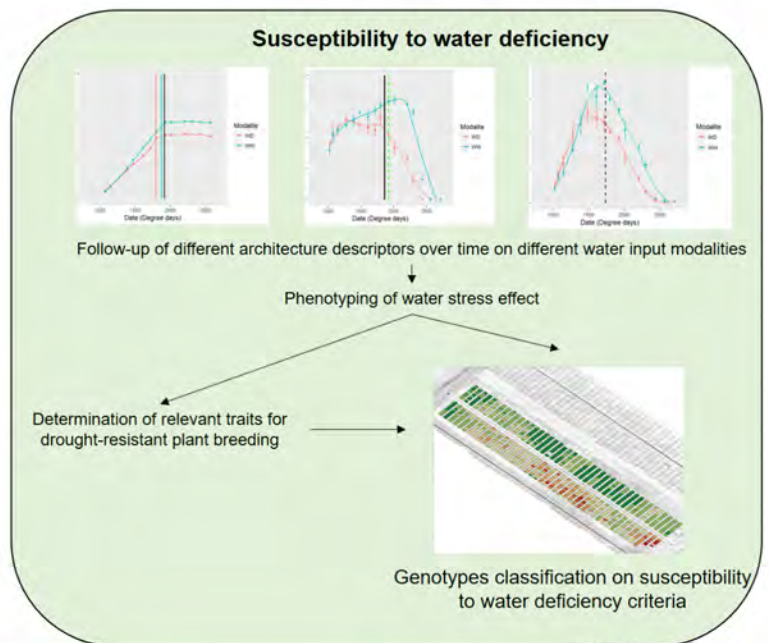
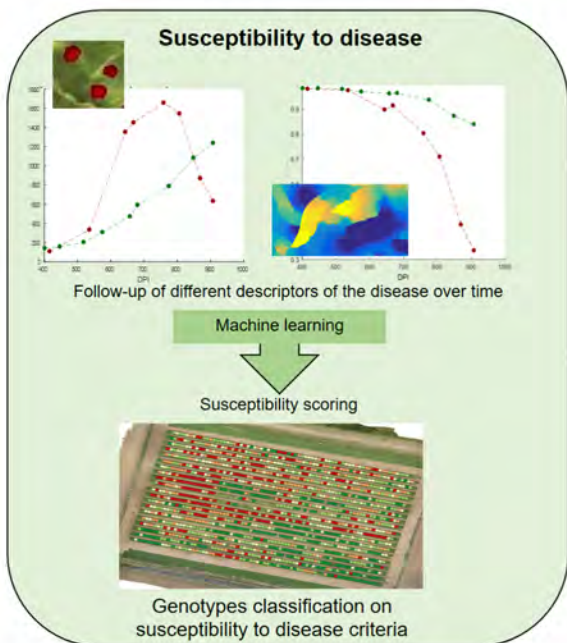
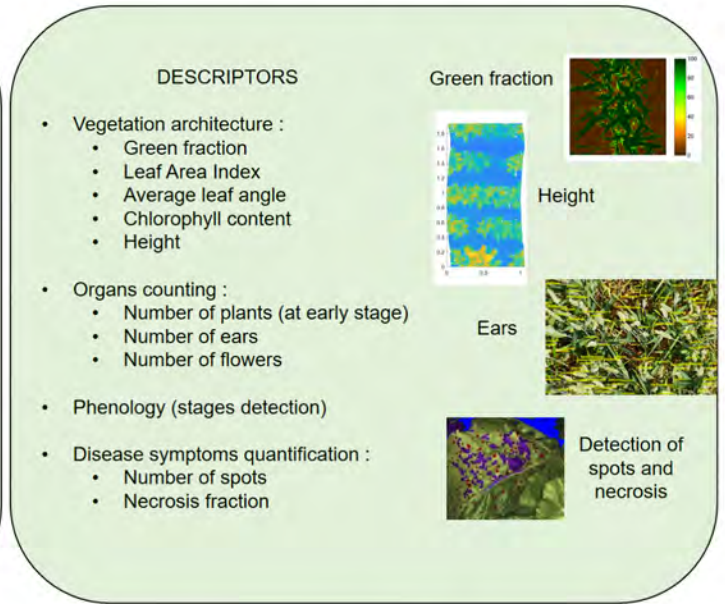
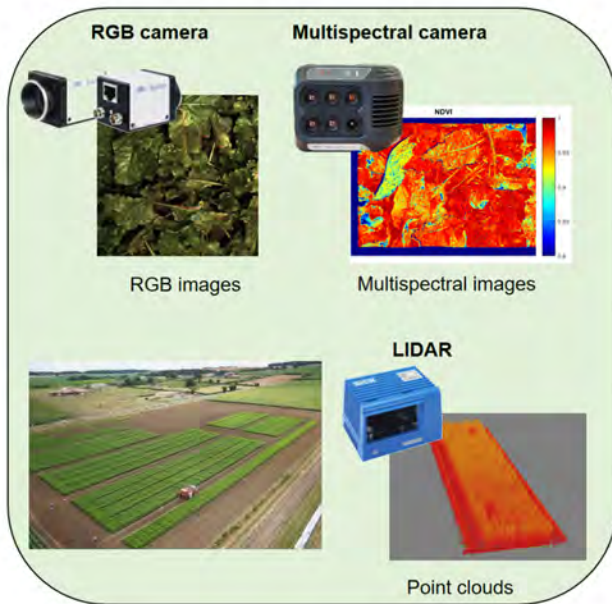
### Monitor

check mission progression monitor measure



# DATA PROCESSING

## Phenotyping applications from Phenomobile data



- Evaluation of seeds quality (from plant counting at emergence)
- Evaluation of resistance to nitrogen deficiencies (from multispectral and chlorophyll assesment)
- Determination of yield components (biomass assesment, radiation use efficiency, water use efficiency ...)
- Evaluation of seeds quality (from plant counting at emergence)
- ...