AGREENCULTURE

2022

Positionning et guidance

Agricultural robotics

Optics & AI

Welcome to AGREENCULTURE

Agreenculture is a French company that designs, develops and produces autonomous solutions for the agricultural world.

Agriculture is an expertise that continually rethinks itself to offer the best to consumers, through more sustainable and virtuous practices. In order to help all producers achieve their ambitious and demanding goals, tools precision is a key issue.

Agreenculture has made this requirement the basis of its innovation. With 13 years of Research and Development in the field of positioning and satellite guidance, based on the previous experience acquired from NAV ON TIME , we have invested this know-how in the development of our robots for the past four years.

Co-designed with different players in the agricultural world, our robots maintain plots of perennial crops in total autonomy and already accumulate several thousand hours of operation in autonomous mode and in real conditions.

This shared passion for our terroirs and the fundamental role of Agriculture motivate us, for our French and European collaborators, but also for you, in order to constantly evolve and offer you the best.

Since 2016 **45 employees** **Toulouse**

Our history

2007 — Nav On Time

2016 — Creation AGREENCULTURE Nav On Time takeover

2017 — 1rst demonstrator

2018 — CENTEOL challenge

2018 — Robot of the Year

2019 — Galileo Masters

2019 — CEOL prototype

2020 — AGCbox surveying

2020 — Beta testers campaign

2021 — Pellenc partnership

2021 — Space Tours

2022 — CLOUD platform

Our vision

We co-develop with farmers and industrialists to offer them the robotic solution that respects their land and their work. We develop and sell safe positioning and innovative robotic systems that corresponds to the expected productivity, efficiency and environmental sustainability in agriculture.

Our missions

Natural resources stakes are high. Thus, it forces everyone to act in a more sustainable and responsible way and to provide solutions with high precision and consciousness of the situation.

AgreenCulture focuses its efforts on reducing the farmer's workload and supporting them in maintaining their farms. The goal is to offer a safe and affordable robotics solution focused on the preservation of the land and the quality of the soil and the environment.

Our founders

Christophe AUBÉ

Founder and CEO

8 years in Project Management and Business Development
SNECMA

In charge of :

* Strategy and company organization
* Business development

Clément BARON

CO-Founder and CTO

9 Years in Radar and Project Management
CNES

In charge of :

* Technical Direction of Robotics Projects
* Technical Referent for Positionning, Guidance GNSS and Robotics

Emmanuel GOUA de BAIX

Co-Founder and GNSS Expert

15 years of Experience in GNSS
NAV ON TIME

In charge of :

* GNSS and Positioning Expert
* Research & Development

Our expertises

Positionning and Guidance

Agreenculture has developed a safe GNSS positioning system RTK with centimetric precision. Combining this positioning system with high-performance guidance laws, we are able to automate any type of outdoor machinery, making it 100% autonomous.

Our RTK satellite positioning solution is guaranteed by the accuracy of an automotive grade ASIL B certified tri-frequency GNSS receiver. This precision, coupled with a high level of safety, guarantees you a high performing and safe working environment.

Artificial Intelligence and Optics

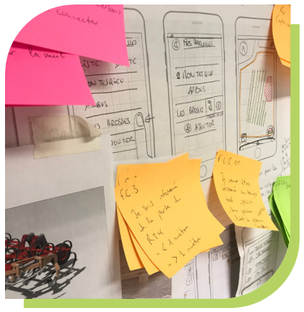
The skills in imagery and artificial intelligence enable a wide variety of data to be captured and processed. We thus use different image processing algorithms associated with artificial neural networks. This enables us, as needed, to identify diseases, estimate performance, etc.

Coupled with robotics, the collection and analysis of useful agronomic data makes it possible today to meet the varied needs of the farmer in the short and long term.

Mechanical design and embedded systems

The particularity of Agreenculture today is that it masters the different phases of development of a robotic solution. Present from the initial design phases up to the industrialisation stage, we work alongside you in the development of your robotic solutions.

The robustness and maintainability of your machines is our priority. Together with our industrial partners, we design machines that are functional and simple to use.



Design and UX

During the design process, we take three factors into account: the challenges facing users, the ecosystem in which our solutions will be used, and accompanying changes in usage so that everyone benefits from the best of Agreenculture's technical expertise.

Our innovations are integrated into an existing agricultural ecosystem, out of concern for the economy and ecology. Designing autonomous robots is not enough. To enable access to these complex technical solutions without any constraints, we refine the user experience every day to make it more fluid.

Our interface

Your robots are easily managed, thanks to the mission management application. Its ergonomics are based on feedback from our users.

Once at its starting point, the robot moves safely and autonomously within the plot to complete its mission.

All the parameters present in the application allow you to maintain the agronomic expertise and adjust the attitude of the robot and the tools in real time.

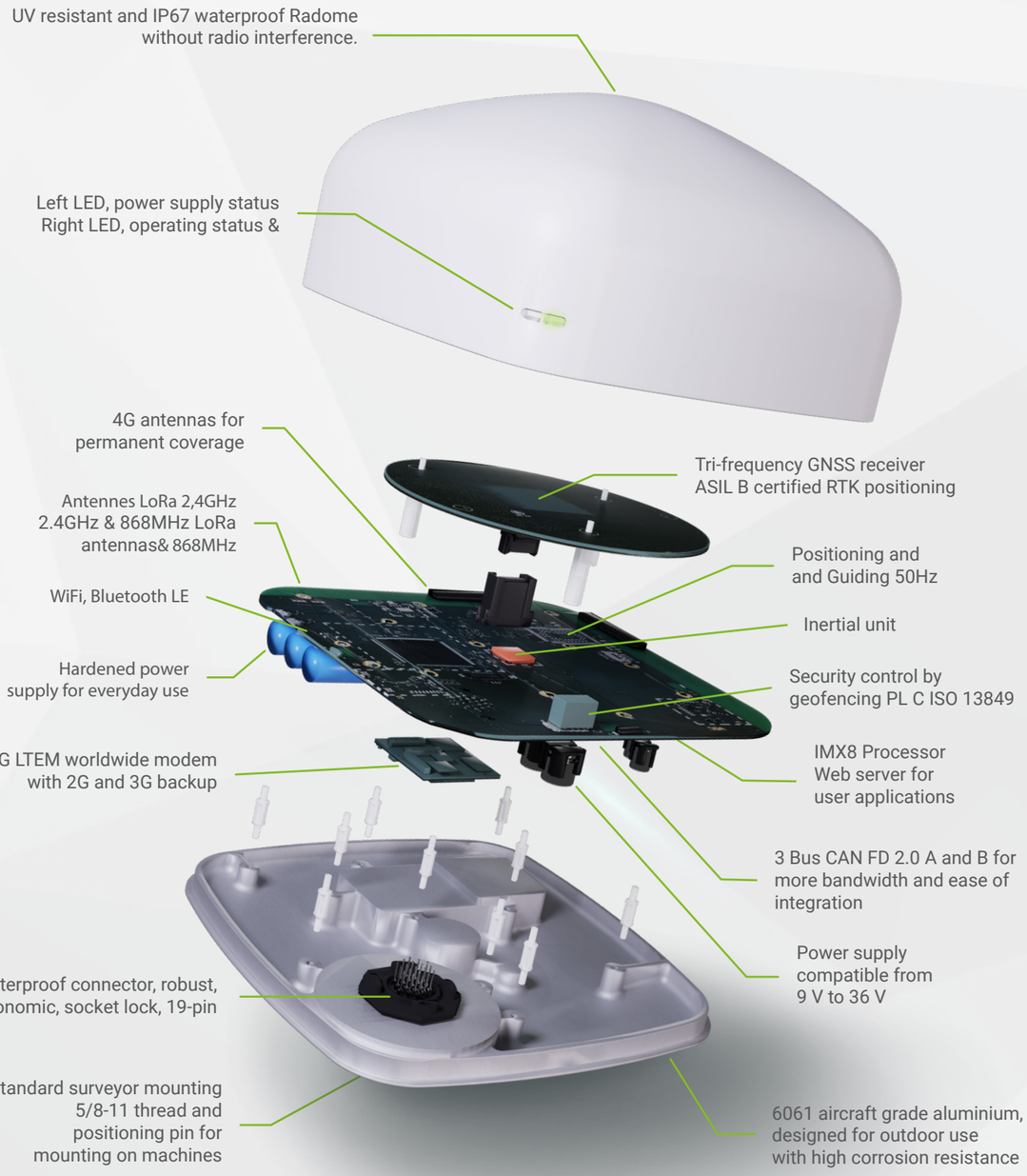
In addition, you will be informed immediately of any occurrences that occur during the mission. Through the application, Agreenculture is always on hand to provide answers to your questions.

It is the essential tool for managing your mission schedule and getting the most out of the robotisation of your operation.

Our products

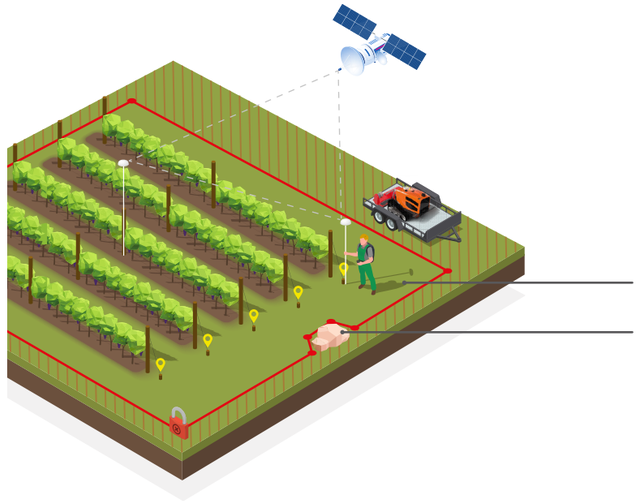
AGCBOX

The AGC BOX is a technology powerhouse for all your machine automation needs.



AT THE SERVICE OF YOUR EXPERSTISE

By combining an ASIL B certified GNSS - RTK receiver and the computing power of a computer, the AGC Box supervises and secures the execution of work, and transforms the machines to make them autonomous and communicative. It is a powerful interface linking your expertise and the machine.



SURVEYING

This step consists of digitalizing the parcel and securing it with a virtual outline.

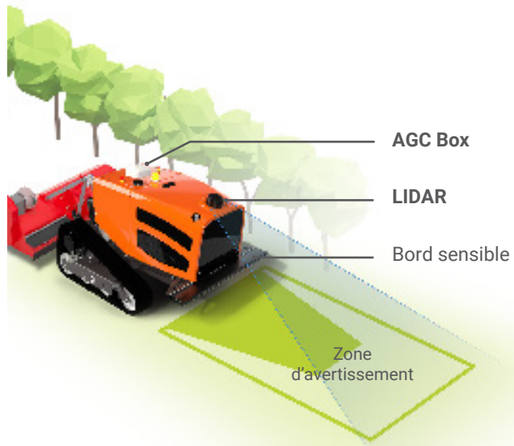
1. Installation of the baseline
2. Mapping of crop rows
3. Mapping of all obstacles (pylon, water hydrant, ditch, ...)
4. SafeFencing - Safety boundary line

SafeFencing is the certified safety feature which ensures that no part of the CEOL robot or its tool protrudes beyond the safety contour defined during surveying, the accuracy is centimetric.

MISSION GENERATION

A mission is the working path defined for a robot/implement combination on a plot.

5. Generation of the route for CEOL
6. Mission optimization
7. Validation test on simulator



COURSE OF THE MISSION

8. Activation of the robot and mission launch

Transport, unloading, positioning.

9. Setting up CEOL and its tool

Working speed, working height, width, ...

10. End of mission

The robot returns to its parking area and alerts by SMS.

CEOL

CEOL is an autonomous crawler that allows the mechanical maintenance of the vines row and inter-row. CEOL reduces the constraints of farmers, while respecting the soil, as it is :

ACCURATE TO THE CM

Guided by GNSS RTK, the AGCbox : Agreenculture's positioning and guidance box, offers automatic steering with centimetric accuracy to guarantee quality work as close to the row as possible.

SECURE

The Safe fencing certification ensures that CEOL will not leave its defined working area. It is also equipped with detection sensors that allow it to slow down and stop in case of an obstacle.

ECO-FRIENDLY

Equipped with tracks and lighter than a tractor, its hybrid system reduces diesel consumption by 3 to 5 times compared to a conventional tractor. CEOL maintains the soil between the rows and between the vines. Autonomous, it saves fuel at all times without creating a rut.

MULTIFONCTIONAL

Le relevage trois points classique de catégorie 1, permet à CEOL de tracter ou porter une gamme d'équipements de différentes tailles et robotiser ainsi une grande partie des travaux réalisés aujourd'hui avec un tracteur.

COST-EFFECTIVE

An 8-hour day of tractor driving turns into 2 hours of CEOL management.

AUTONOMOUS

CEOL works autonomously, without breaks and without the need for human presence, for up to 20 hours.

EASILY TRANSPORTABLE

CEOL fits on a trailer. For delicate manoeuvres (loading, unloading, etc.), it can be operated manually, in electric mode, thanks to its radio control.

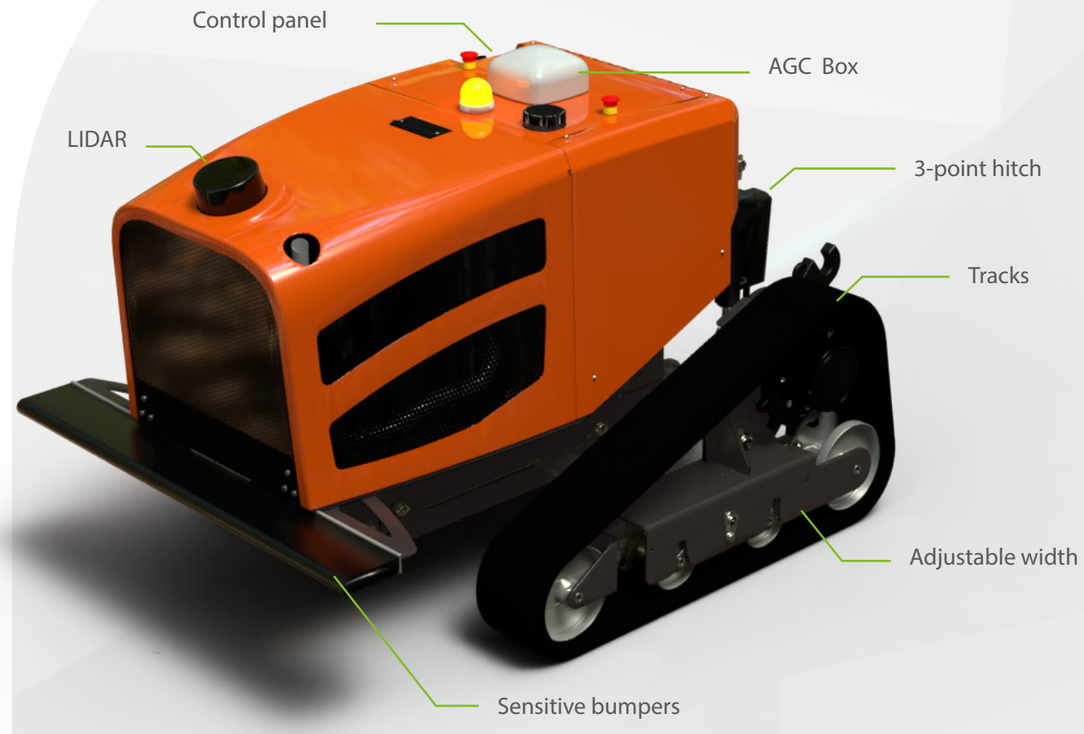
EASY TO USE

CEOL's digital interfaces have been designed in collaboration with farmers. CEOL is equipped with a range of options that allow the user to adapt his machine according to his needs.

TIME SAVING

The automation of repetitive tasks takes the farmer out of his cabin so that he can concentrate on managing his farm.

> "AN 8-HOUR DAY OF TRACTOR DRIVING TURNS INTO 2 HOURS OF CEOL MANAGEMENT"



TOOLS


Shredder


Narrow frame


Large frame


FACA roller


Inter-vine hoe


Kress fingers


Crumbling disk

TECHNICAL INFORMATION

TEMPLATE

Length	170 cm
Width	Modulable from 72 to 110 cm
Ground clearance	21 cm (16 cm with weights)
Track width	18 cm
Ground pressure	< 215 g/cm^2
Lifting height	30 cm
Lifting capacity	300 kg

POSITIONNING AND GUIDANCE

Geo-positioning	GNSS RTK (centimetre accuracy)
Maximum speed	6 km/h
Safety	Emergency stop button
Dedicated application	Adjustable parameters

ENERGY

Thermal autonomy	> 20 h
Traction power	24 kW
Propulsion	Électrique en 48V
Battery autonomy	60 à 90 mins

PHENOBOX

A SOLUTION TO SUPPORT BREEDERS

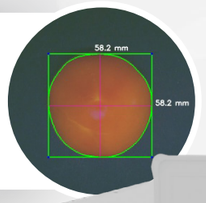
PHÉNOBOX is a high-throughput phenotyping machine dedicated to varietal selection.

It provides objective and consistent data through extensive measurement and analysis of different agronomic characteristics.

Through standardised processes and accurate data, we obtain uniform comparisons between seeds and fruits.

Extensive analyses

Colour, weight, dimentions, shape, roundness and conicity indices, disease detection, etc.

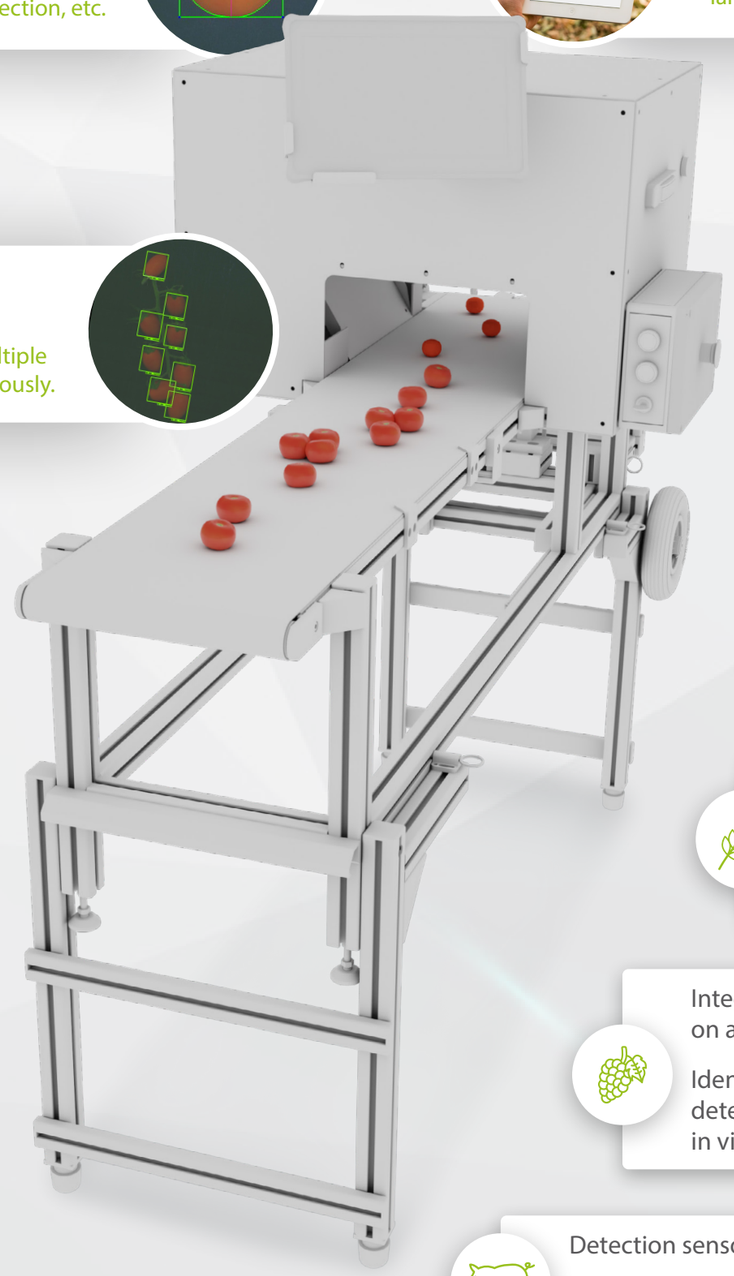


Integrated tablet

Simple and accessible interface, available in all languages.

Versatile & polyvalent

Phenotyping of several varieties of fruit and multiple pieces of fruit simultaneously.



COMPARABLE OBJECTIVE DATA

The precise calibration of Phenobox allows for reliable data acquisition.

PRODUCTIVITY GAINS

1 250 fruits/h	Vs	around 700 fruits/h
Phénobox		Humain

EASILY TRANSPORTABLE

Equipped with wheels and a standard size, Phenobox can easily be transported in a utility vehicle.

IMAGE ACQUISITION & ANALYSIS

Results in table/graphic/statistical form stored on a secure cloud platform.

SOLD INTERNATIONALLY

Delivery and maintenance of the machines is available worldwide.

CERTIFIED AND SECURED

CE certified
Machine Safety Directive 2006 | 42 | CE

AI & OPTICS

Agreenculture's ARTIFICIAL INTELLIGENCE (AI) AND OPTICS DEPARTMENT develops cutting-edge technologies for the collection and analysis of agronomic data.

These technologies can be embedded and meet the various needs of the agricultural world (detection, identification of diseases, yield estimates, etc.).

EXPERTISES

Creation of customized tools

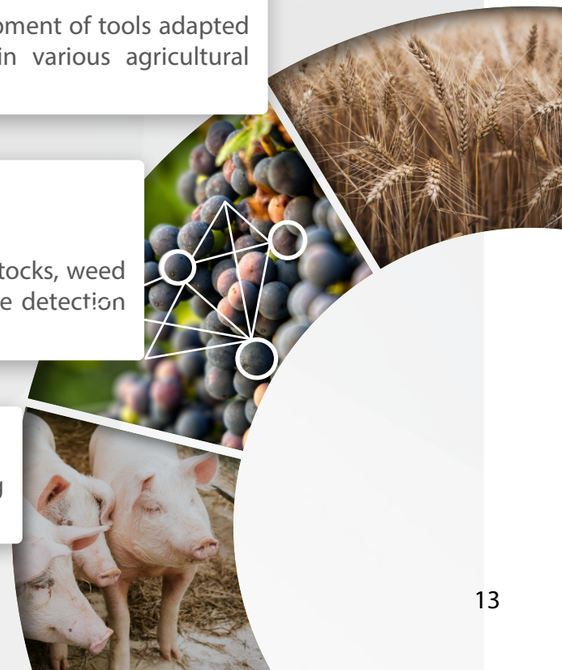
Design and development of tools adapted to each problem in various agricultural fields.

Integration of optics on agricultural machinery

Identification of missing vine stocks, weed detection in field crops, disease detection in vines and grapes, ...

Detection sensors for livestock

Detection, analysis and traceability of pig diseases in slaughterhouses.



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AGRI SUD-OUEST INNOVATION INRAE LA FERME DIGITALE La FRENCH TECH AGRI20 RobAgri

EUROPEAN SATELLITE NAVIGATION COMPETITION 2018

The Robot Of The Year
Ethical A.I. & Robots for a better world!

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Space tour 2021

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