



METACORTEX: PRESENTATION

Metacortex is IBM Business Partner since 2009 and mainly works on the IBM Power platform, with certified technical and commercial professionals.

Since 2011 the collaboration with IBM services financial, to offer our customers the financial solutions for the purchase of services and technology.

The company was established in Business Innovation Center of Pergine Valsugana in Trentino (an autonomous province of Italy, which is often nicknamed "apple garden") and incubated in the Mechatronics Pole of Rovereto.

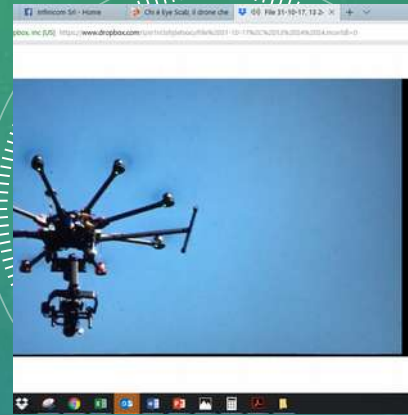
Due anni di lavoro e sperimentazioni hanno permesso di monitorare ogni singola pianta di un meieto, ricevendo utili informazioni su quelle più a rischio

Thanks to our programs using Artificial Intelligence (A.I.) it is possible to determine the zones and the evolution of the risk of scab as a function of a data network built using advanced sensors.

This allowed to develop a methodology applicable to different crops and diseases to improve production in compliance of the environment.

ABOUT US

- IGARSS 2017 FR4.L10.3 - Fort Worth Texas(USA) July 2017
- Corriere Innovazione - September 2017
- Ansa Industry 4.0 September 2017
- MDPI-Enviroments 2017 Volume 4 Issue 2
- TG Economia - October 2017
- Terra Trentina March 2018
- MDPI-Sensors 2020 Volume 20 Issue 15
- FreshPlaza article 9269645 November 2020



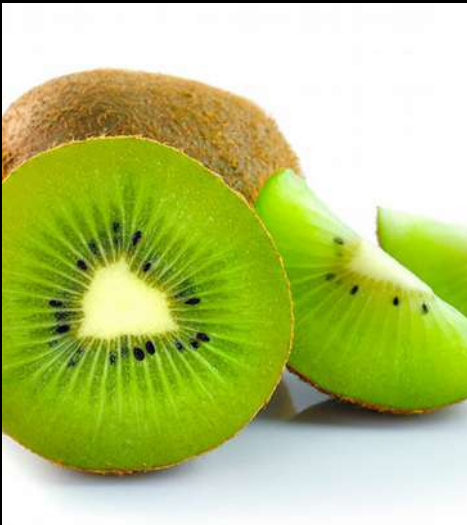


THE PROBLEM: APPLE SCAB

- The project arises from the need of Trentino farmers to face one of the worst diseases which may affect apple production: the Scab
- Scab, even in cases of mild infections, attacks the leaves and fruits, especially on the latter; scab produces brown spots which make the fruit no longer marketable
- In 2013, thanks to weather conditions particularly favorable to the disease, there were production losses up to 40% in some cases

THE PROBLEM: OTHER PATHOLOGIES OR OTHER CROP TYPE

- Most agricultural crop diseases depend on one combination of meteorological data (humidity, temperature, leaf wetness, etc.): greater precision in the collection of these data combined with information obtained through advanced sensors allows greater effectiveness in the fight against these pathologies.
- The general problem that our TREE solution addresses is that of knowing how to estimate the risk and degree of infection of crops, allowing the farmer to carry out specific treatments, using a lower dose of pesticides and a higher timeliness of treatments.
- This translates into substantial economic savings and an improvement in product quality
- It is important to highlight the environmental benefit considering that only in Europe hundreds of thousands of tons of chemicals are used for prevention and treatment of agricultural crop diseases



THE SOLUTION: TREE

- TREE is an innovative solution for precision agriculture and mapping of territory
- Use of an UAV (equipped with a radiometric thermal camera and a six bands sensor multispectral camera) to estimate the risk and the degree of infection on a particular plantation.
- The UAV is used in cooperation with weather stations (which provide local data), and an accurate mathematical model that allows you to estimate the dates of maximum concentration of infections for the disease.
- Once the risk dates are known, via the UAV it is possible (through targeted flights) to identify which are the areas most prone to the pathogen, getting a precise map of the plants already infected and those potentially at risk.



THE SOLUTION: TREE

- The drone provides information on the status of plant health, the leaf development index (LDI) and therefore allows to forecast the production, with a decisive impact on marketing process
- In this way, the farmer may very well reduce, without unnecessary waste, the use of pesticides
- A map with accurate weather directions allows you to predict the evolution of the risks of infection and pilot preventive treatments
- The system is dynamic and adapts to conditions incorporating evolutions to use them in determine future risk levels



POTENTIAL MARKET

- This type of precision farming goes very well with different crops: apple, orange, pear, apricot, peach, vine, kiwi and also corn, potatoes
- For the defense of these crops they are used only in Italy 39,000 tons of pesticides, 8,000 tons of herbicides, 2,000 tons of growth regulators, 13,500 tons of insecticides (Source Eurostat 2017)
- For the fertilization of the land they are released into the environment 1,133,000 tons of phosphorus-based fertilizers and 11 million tonnes of nitrogen-based fertilizers (Source Eurostat 2017)
- A saving of 20% translates into hundreds of millions of Euros which remain available to farmers and a relief huge for the environment

TECHNOLOGY

- DJI S1000 weighs only 4.5 Kg. and takes off with an MTOW (Maximum Take Off Weight) of 11 Kg.
- The presence of eight rotors gives it an incredible stability even in case of strong winds and allows to do face most of the accidents.
- Its retractable supports during flight allow to take 360 ° photos by removing the need for perform dangerous yaw maneuvers with the UAV.
- The autonomy at full load of this drone is 17min with a power supply consisting of two six-cell lithium polymer batteries delivering 10,900 mAh



SERVICES

We identified 3 phases which, despite having autonomous life, can be integrated to give a wider result



Monitoring
and
prevention



Production
Control



Additional
Services



I SERVIZI



Monitoring and prevention

- The data collected thanks to a survey plan are integrated (for example) with the weather data. Then projections and maps are generated, they show areas that need a specific intervention and the evolution over time
- the risk index, based on an artificial intelligence algorithm, is processed
- A survey plan determines the leaf development index, plant stress situations, modification of the chlorosis to identify situations of ongoing pathologies.



Production control

- It provides data on the status of productivity (eg how much I am producing)
- A survey on a constant basis (min 3) provides a series of data on the growth and predicts the final harvest
- I can also check the state of health (eg sufficient water intake, nutrients, etc). There detection can be random or repeated: the quality result will conform to the number of detections carried out

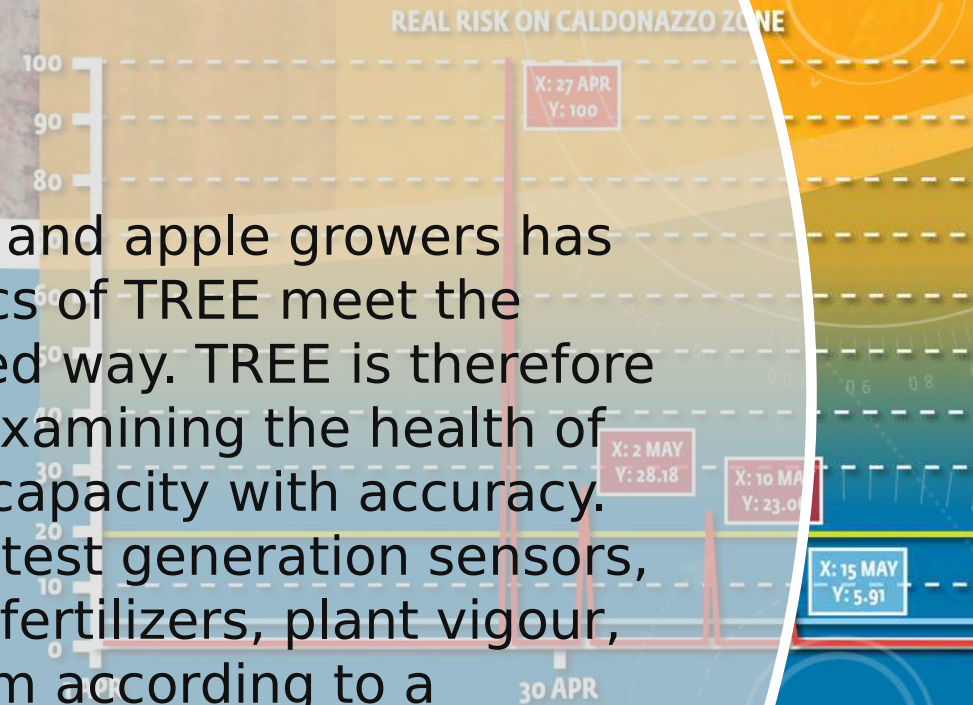


Additional services

- Soil composition and indication of predisposition to particular crops
- Analysis of the presence of volatile pollutants on the ground
- Land mapping according to water stress
- Control of flowering vigor
- Analysis and detection of damage from atmospheric events

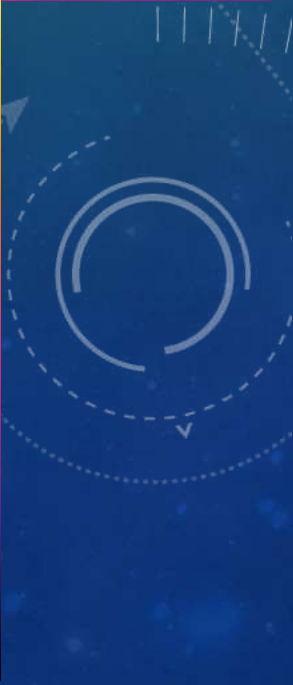
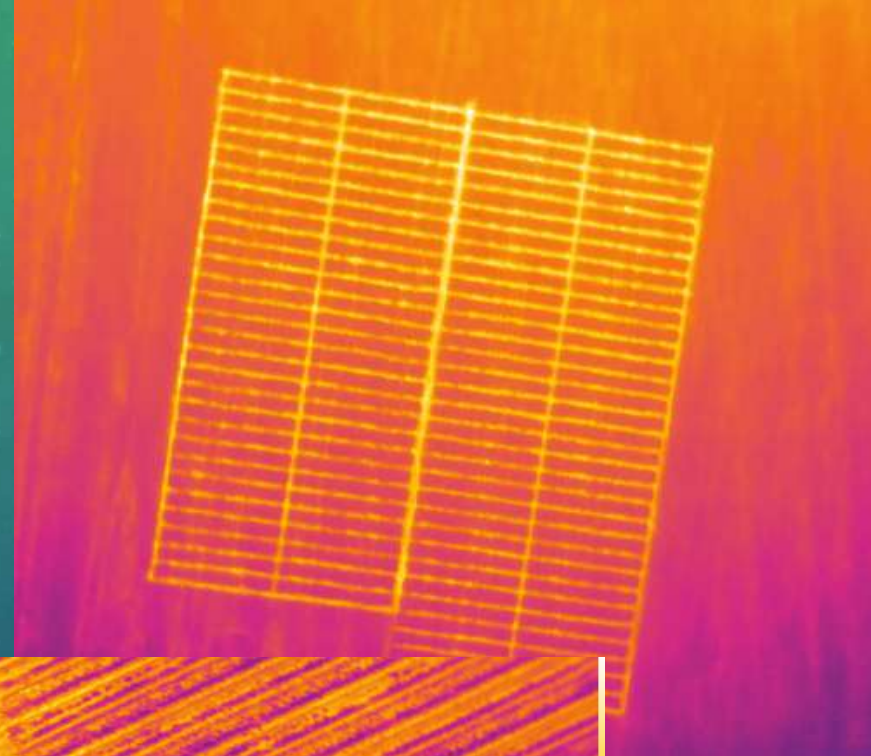
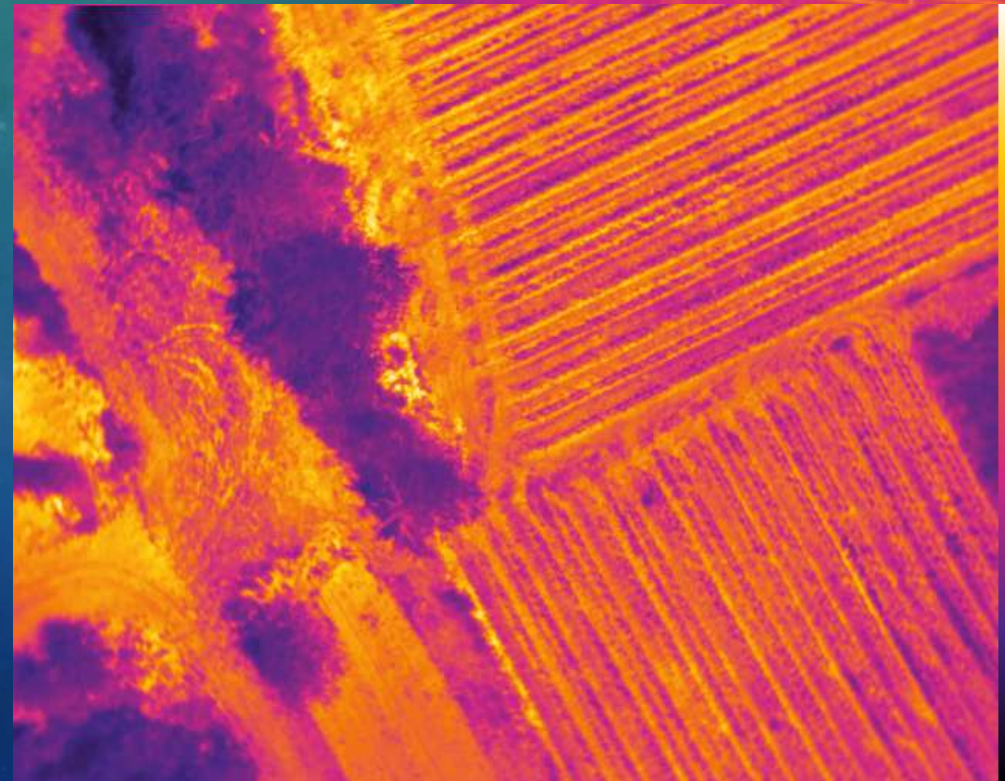
TODAY

Intensive work alongside the Italian kiwi, grape and apple growers has given us further confirmation: the characteristics of TREE meet the needs of production in a simple yet sophisticated way. TREE is therefore capable of being a valuable aid for growers in examining the health of the plantations and assessing their production capacity with accuracy. This is thanks to TREE which collects, with its latest generation sensors, the data of the main indicators (water content, fertilizers, plant vigour, quantity of production) and then processes them according to a mathematical model developed in collaboration with the University of Trento.



TODAY

But we don't stop there: our Research & Development team is collaborating with a group of agronomists for the detection of the health and weed conditions in rice plantations.



TODAY

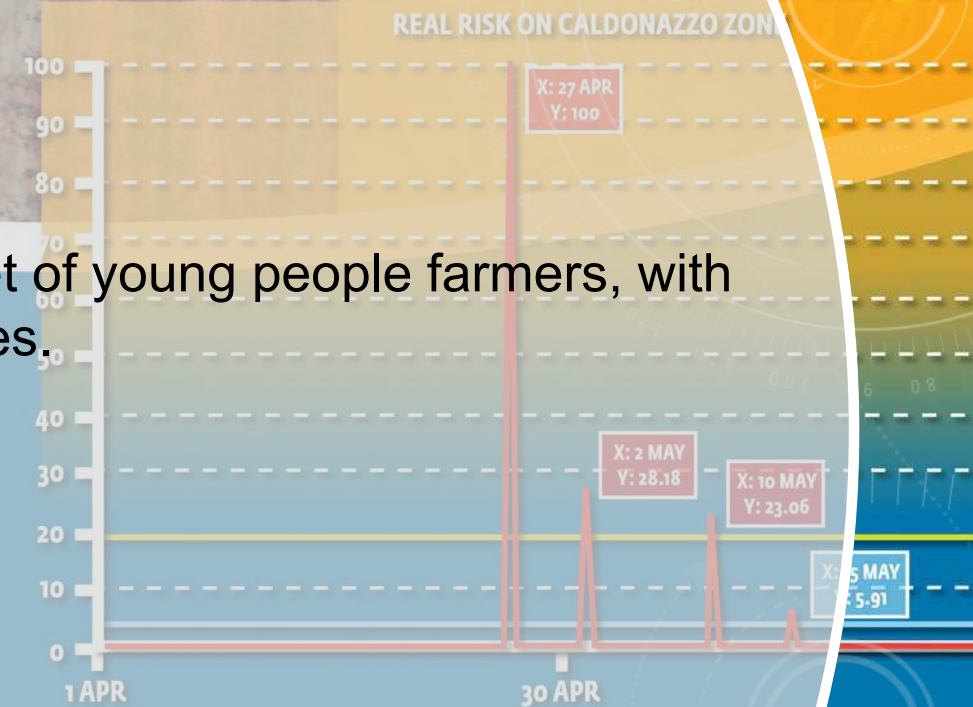
We plan to create an APP designed for the target of young people farmers, with the possibility of upgrades and additional services.

We participate in trade fairs:

- FIERAGRICOLA - VERONA 2020
- Macfrut digital - CESENA 2020

Collaboration is going on with:

- University of Trento
- Fondazione Edmund Mach
- Trentino Sviluppo
- C.O.F.A.V. Alta Valsugana Fruit growers Consortium

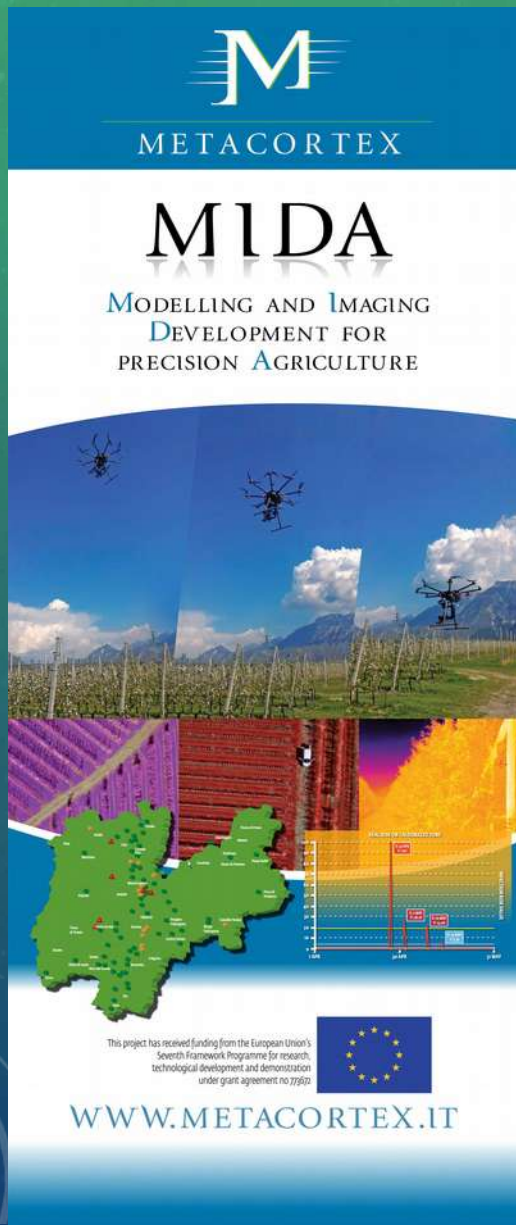


References

Have a look at our videos and download the documents we published

- [Video 1](#)
- [Video 2](#)
- [MDPI Environments](#)
- [IGARSS 2017](#)
- [MPDI Sensors](#)

Recognitions obtained by the European Union



The poster features the Metacortex logo at the top, followed by the title 'MIDA' in large letters. Below the title is the subtitle 'MODELLING AND IMAGING DEVELOPMENT FOR PRECISION AGRICULTURE'. The central image shows a landscape with a vineyard, a drone flying over it, and a 3D map of the region. At the bottom, there is a small text box with the European Union logo and the website 'WWW.METACORTEX.IT'.

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METACORTEX

MIDA
MODELLING AND IMAGING
DEVELOPMENT FOR
PRECISION AGRICULTURE

This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 779101

WWW.METACORTEX.IT



The certificate is from the European Commission, featuring the EU flag and a 'SEAL OF EXCELLENCE' ribbon. The text is centered and describes the project proposal 'MIDA' for precision agriculture. It mentions the project was submitted under the Horizon 2020 SME Instrument and was highly ranked. The certificate is signed by Elisa Ferreira and Mariya Gabriel, dated Brussels, 07/05/2020.

SEAL OF EXCELLENCE

European Commission

*Certificate delivered by the European Commission,
as the institution managing Horizon 2020,
the EU Framework Programme for Research and Innovation 2014-2020*

The project proposal
946250, MIDA
Modelling and Imaging Development for precision Agriculture
submitted under the Horizon 2020's SME Instrument (grant only and blended finance)
call H2020-EIC-SMEInst-2018-2020 (H2020-EIC-SMEInst-2018-2020-3) of 9 October 2019
in the area of EIC-SMEInst-2018-2020

SME instrument
by
METACORTEX Srl
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Italy

following evaluation by an international panel of independent experts
**WAS SCORED AS A HIGH-QUALITY PROJECT PROPOSAL
IN A HIGHLY COMPETITIVE EVALUATION PROCESS***

This proposal is recommended for funding by other sources, since Horizon 2020 resources available for this specific Call were already allocated following a competitive ranking.

* This means passing all stringent Horizon 2020 assessment thresholds for the 3 award criteria (excellence, impact, quality and efficiency of implementation) required to receive funding from the EU budget Horizon 2020.

Elisa Ferreira,
Commissioner for
Cohesion and Reforms

Mariya Gabriel,
Commissioner for Innovation, Research,
Culture, Education and Youth

Brussels, 07/05/2020

FURTHER INFORMATION



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