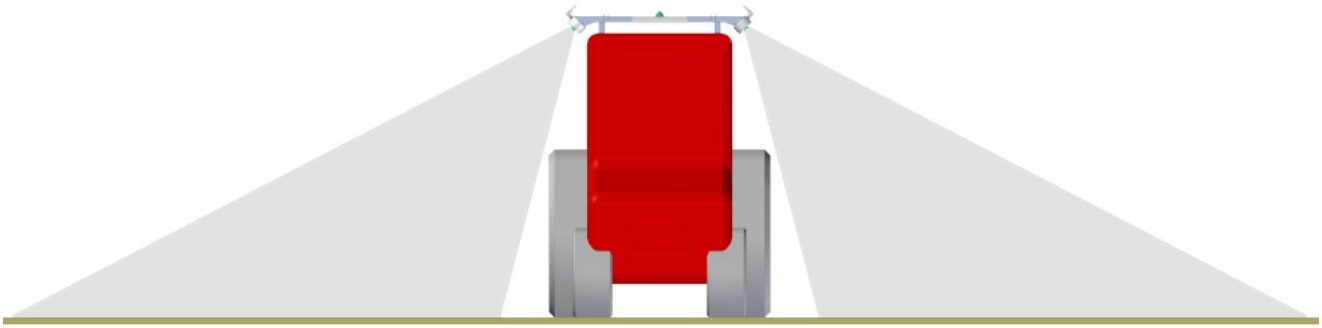
MECS-CROP

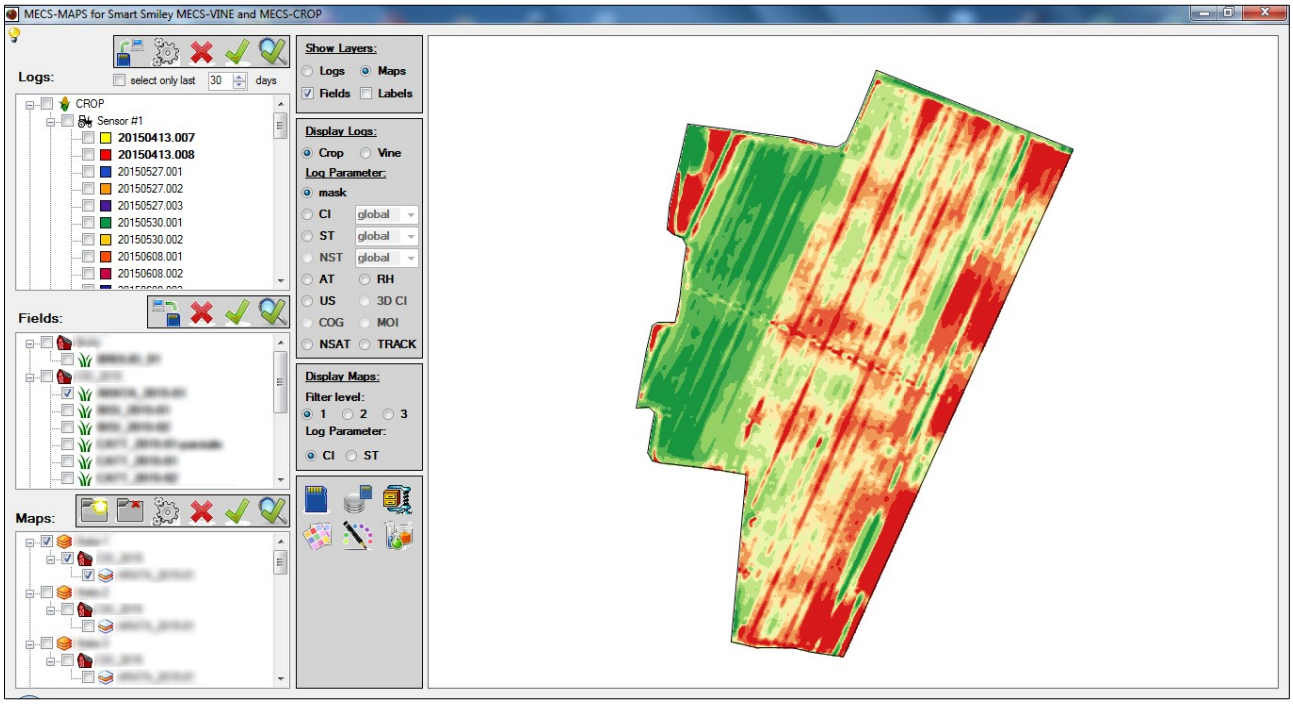
MECS-CROP[1] (Micro Environment and Canopy Sensor, CROP version) is a multi-parameter sensor specifically developed for the characterisation of the vegetation canopy and of the microenvironment of row crops (tomatoes, corn, etc.).

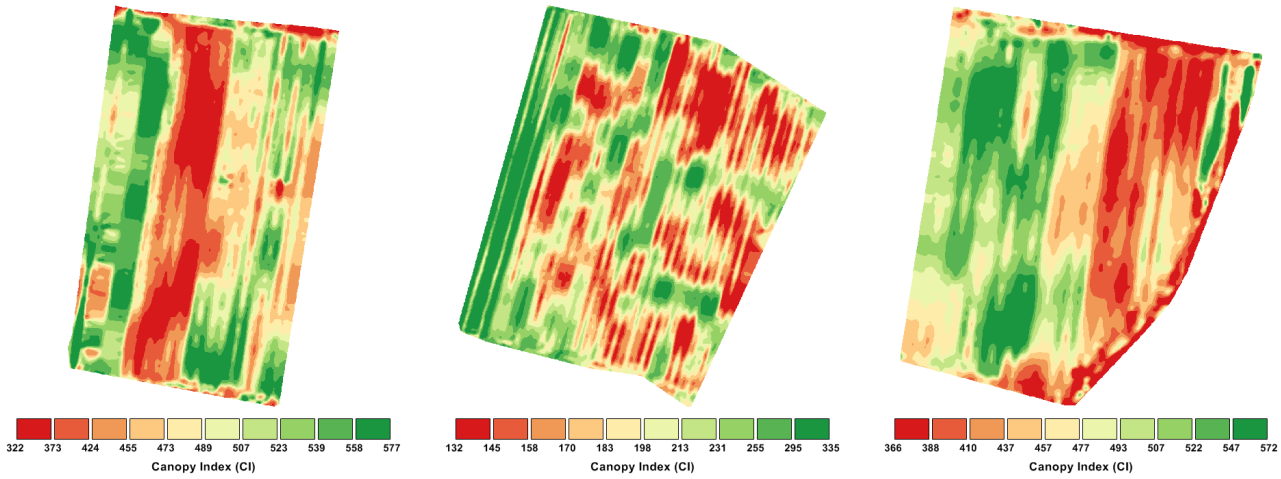


MECS-CROP was developed and patented by TEAM, a group of companies (Studio di Ingegneria Terradat, Appleby Italiana and Casella Macchina Agricole) established in 2009 with the aim of providing the farming sector with “turnkey” precision agriculture solutions. Its products range from data collection and processing to subsequent data management by means of electronic devices and dedicated agricultural machinery able to perform VRT (Variable Rate Technology) activities in the field.

MECS-CROP has been designed and created in order to draw thematic maps with a level of significance at least similar to the one that was previously achieved only thanks to multispectral satellite data. The level of detail these brand-new sensors can achieve is even higher than the one reached in the past. Our sensors allow going beyond the operation limits of the proximity sensors that have been developed to date; it is exactly these limits that have prevented an extensive, simple and reliable use of this technology.
The post-processing software, MECS-MAPS, turns the data collected by the sensor, recorded in *log* files, into a sequence of levels of information that are made available as overlapping maps. Thanks to MECS-MAPS, users can use the *log* files recorded by the sensor to set up customised work programmes. These programmes will help them perform VRT activities in the field by means of VRT-enabled agricultural machinery (fertiliser spreaders, manure/compost spreaders, weed wipers, irrigators, rippers to underground liquid manure, harvesters, etc.).

1 *PATENT PENDING.*





It is no doubt that the characteristics of these sensors will catch the user's interest, since they allow him to map his fields and to post-process the relevant data in order to draw thematic maps in a fully autonomous way. This opportunity is of paramount importance to monitor each crop in an optimal mode and ever according to its phenological calendar with particular reference to its sowing/transplanting time.

MECS-CROP combines a GPS receiver and a series of sensors able to record the following parameters: Canopy Index (CI)[2], ambient temperature, crop temperature, relative humidity.

The sensor features a special orientation and a wide angle of view that allows covering a width up to 20 m transversely with respect to the direction of the tractor. Furthermore, the Canopy Index measurements are not affected by variations of light on plants (presence/absence of clouds, elevation and angle of the sun, shading, etc.).

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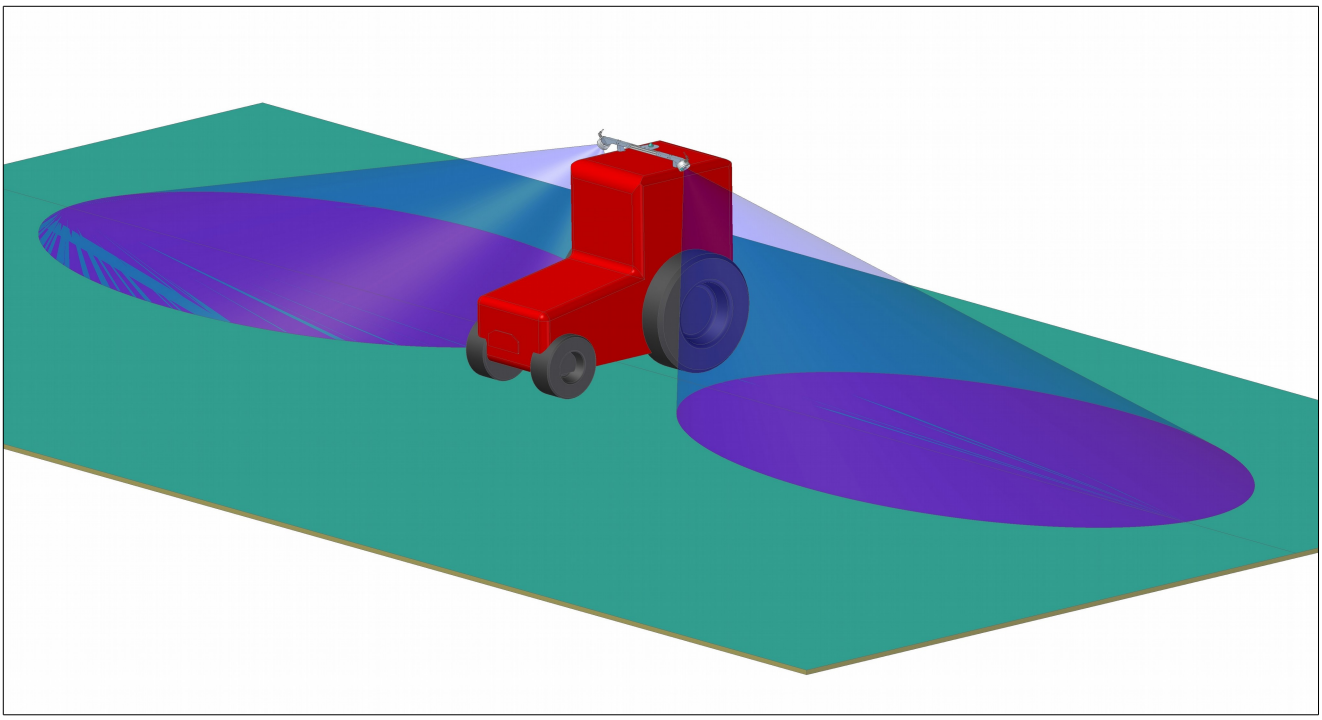
2 *The Canopy Index (CI) measured by the MECS-CROP sensor is a dimensionless value which may vary between 0 and 1000 that basically represents the vegetation amount per area unit and may be directly related to physically-based variables such as LAI (Leaf Area Index), TRV (Tree Row Volume), etc. Experimentations in cooperation with Universities and Research Centres are being carried out to prove these correlations.*

MECS-CROP can also be used to control VRT-enabled machinery in real time; in that case, the data collected by the sensor attached to the front of the tractor are directly used to adjust the work done by the machinery (weed wipers, etc.) attached to the back of the tractor.



The different levels of information can be combined in a variety of ways or used individually to suit the user's requirements; this is possible in case of VRT applications with data collected by the sensor during a previous mapping session as well as in case of VRT applications with real-time control. This feature allows to devise much more successful and effective precision agriculture solutions than those developed to date.

For further information, please visit www.teamsmartfarming.com.