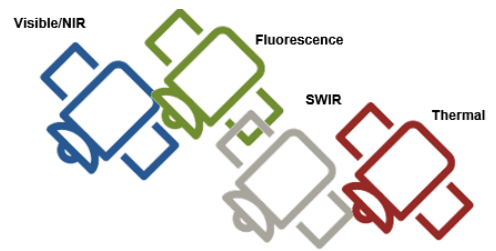**WG3**

Sensor synergies

Workshop "Sensor synergies and stakeholder involvement"

Barcelona-Spain, 28/03/-30/03/2022

Participants: Maria Luisa Buchaillot (LO, University of Barcelona), Etienne David (HiPhen Plant, France), Jose A. Jimenez-Berni (IAS-CSIC, Cordoba, Spain), Shawn Kefauver (LO, University of Barcelona), Eyup Selim Koksal (Ondokuz Mayıs University, Samsun/Turkey), Miriam Machwitz (LIST, Luxembourg), Egor Prikaziuk (University of Twente, Netherlands), Offer Rozenstein (Agricultural Research Organization - Volcani Institute, Israel), Martin Schlerf (LIST, Luxembourg), Veronica Sobejano Paz (Aerial Tools, Denmark), Esra Tunc Gormus (KTU, Turkey), Emre Tunca (Ondokuz Mayıs University, Samsun/Turkey), Zaib un Nisa (Uni Molise, Italy), Florian Werner (Hydrosat, Luxembourg), Carlos Ferraz (HEMAV, Spain).

In March 2022 we had a workshop in Barcelona with talks on different examples for sensor synergies, preparation of the guidelines (deliverable WG3), exchange with stakeholders/private companies and planning of a COST follow-up proposal from the perspective of WG3.

Program:

MONDAY			
SENSECO WG3 BCN Session 1: https://meet.google.com/gex-vduf-pcd			
13.00	Miriam	Machwitz	Arrival of participants and welcome
13.30	Offer	Rozenstein	Identification and characterization of Biological Soil Crusts in a sand dune desert environment across Israel–Egypt border using LWIR emittance spectroscopy
14.00	Egor	Prikaziuk	Scope: Optical-thermal synergy in (with or without SIF)
14.30	Miriam	Machwitz	UAV multi-sensor data for disease detection- How to find the best ROI?
15.00			Coffee break
SENSECO WG3 BCN Session 2: https://meet.google.com/efs-ewdf-ddv			
15:30	Maria Luisa	Buchaillot	Assessment of salt stress in Moringa and Pommegrante trees through thermal images
16.00	Martin	Schlerf	Review Paper
16.30-18.00	all		Guideline preparation (timing, atmospheric correction, ROIs, time lag, spatial resolution, targets/reference panels, acquisition angle) Preparation round table discussion
TUESDAY			
SENSECO WG3 BCN Session 3: https://meet.google.com/mpm-zhzo-wwx			
9.00	Zaib	Un Nisa	Scale issues in ET estimation by different RS based methods affecting Water Productivity
9.30	Eyüp Selim	Köksal	Evapotranspiration mapping and water stress-related indexes by using UAV multispectral and thermal images.
10.00	Emre	Tunca	Python applications for UAV image processing
10.30			Coffee break
11.00	Esra	Tunc Görmüs	Deceased trees in the forest with Sentinel 1 (radar), Landsat and Sentinel 2 images in Google earth engine
11.30	Berni	Jimenez-Berni	LiDAR tools from phenotyping and crop management
12.00	Adrian	Gracia Romero	UAV plant phenotyping under abiotic stress
12.30-14.30			Lunch
SENSECO WG3 BCN Session 4: https://meet.google.com/vkz-csmw-izp			
14.30	Veronica	Sobejano Paz	Survey
14.45	Veronica	Sobejano Paz	Aerial Tools, Denmark
15.00	Carlos	Ferraz	HEMAV, Spain
15.15	Etienne	David	HiPhen
15.30	Florian	Werner	HYDROSAT
15.45			coffee break
16.30-18.00	all		Round table discussion (key questions, to be prepared)
WEDNESDAY			
SENSECO WG3 BCN Session 5: https://meet.google.com/ynp-pyyr-soc			
9.00			Follow-up discussion, finalization of guidelines, planning of next steps
10.30			Coffee break

11.00	Shawn	Kefauver	Follow-up COST action
11.30			Discussion
12.30			Lunch

All the talks were followed by a very living discussion and many points came up related to sensor synergies and related challenges, problems and solutions. For example, we had surveys and discussions on the role of different spectral domains for different traits, the role of lidar and SAR, and challenges with thermal data. Overall talks it was stated that there is an advantage to using sensors from different spectral domains but at the same time leading to issues that need to be considered. Furthermore, the review paper which was written within WG3 and led by Katja, was presented and (by chance) submitted during the workshop.

With a breakout group, we worked on the guideline preparation for WG3. We collected examples, problems, challenges to be respected and discussed solutions. However, the guideline preparation still needs to be finalized.

A second breakout group prepared the round table discussion with stakeholders which took place on the second day. This part of the workshop was opened by a presentation on a survey in which 14 different companies of remote sensing in agriculture around Europe were answered. These surveys were done by Maria Luisa and Veronica. The outcome of this survey is also available on the Senseco Webpage. Afterward, each company was presented by its representatives (Veronica, Carlos, Florian, Etienne). The presentations were followed by a very good and living round table discussion. The discussion was focused on better collaboration between Senseco, research, and companies as well as on the role of companies and future collaborations options with respect to a follow-up COST action. A detailed document on the outcomings of the round table discussion can be found on the Senseco website (WG3).