GUIDELINE FOR THE SYNERGISTIC OPTICAL SENSOR USE FOR STRESS DETECTION IN AGRICULTURE

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Key points of the publication

- Disseminate practical, well-structured and easy to read information to wide audience regarding the use of multiple sensors during UAV campaigns
- Target audience: researchers and private sector
- Starting point of the publication is a survey which collected experience from remote sensing experts within SENSECO
- The publication focuses on synergistic sensor use rather than single sensors
- The publication aims to provide user with recommendations and wide array of protocols through citations, as well as lists ‘bad examples’ of multiple sensor mission planning
Paper structure

- Paper consists of three core topics: Preparations for the multiple sensor UAV campaigns, Data -pre and post-processing and Bad Examples showcasing the pitfalls of multiple sensor campaign planning.
Exemplary figure on which sensors to choose for specific plant trait retrieval.

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**Sensors**

- RGB-VIS
- VIS-NIR-MS
- VIS-NIR-HS
- SIF
- THERMAL

**Response Time**

- Instant
- Hours
- Days
- Weeks

**Legend**

- Physiological
- Pigments
- Morphological
Subsections described in data acquisition chapter

1 Optimal timing for data acquisition
- Dependent on chosen sensor types
  - Multispectral / hyperspectral / thermal...

2 Sensor characteristics
- Consider field of view, ground sampling distance, sensor stabilization, and check internal clock of instruments / cameras...

Mission Planning

3 Calibration targets
- Proper radiometric calibration is required for applications using imaging spectroscopy data
  - Different sensors have unique requirements

4 Ground control points
- Strongly recommended even with operating an RTK system

5 Weather data
- Ambient environmental conditions from weather stations, additional measurements for atmospheric correction and quantifying irradiance
Timeline

➔ Survey in summer 2022
➔ Organisation in chapters (Autumn 2022)
➔ regular meetings (Winter 2022/23)
➔ Writing workshop in Barcelona and Tel Aviv (Feb 2023, Apr 2023)
➔ Finalization, last reviews (May/Jun 2023)
➔ Submission: Summer 2023