WIRIS ProSc - High accurate thermal camera for landscape ecology and climate change research

Thermal camera most important features for application in the area of precision agriculture

- Highest thermal sensitivity (< 30 mk)
- Really low temperature drift even during long flight
- Very high homogeneity in thermogram

Workswell WIRIS ProSc is a state of the art thermal imaging camera used for the most challenging applications like a geological, archeological and forest research, ecological and enviromental research, structural research of buildings (dams, chimneys, bridges) etc. Workswell WIRIS ProSc camera is designed for applications requiring the highest temperature sensitivity and accuracy, excellent service and software support.

Think about accuracy

Each WIRIS ProSc thermal camera is precisely calibrated in the climatic chamber. Not only is the accuracy of the thermal camera when measuring different temperatures, but also at different operating temperatures. We therefore managed to achieve absolutely unmatched measurement accuracy in the field of aerial thermography, ie. +/-2°C or +/-2%.

MAIN APPLICATIONS OF CWSI CAMERA

- Water status monitoring – To monitor water stress, ie. the lack of water that the crop is exposed to during the growing season. And regardless of whether the crops are irrigated or not. Special colour map “Crop” and “CropStep” are available.
- Manage irrigation management – Irrigation system optimization both in terms of determining suitable locations for the location of soil sensors and in terms of structure optimization. Special colour map “Water” and “WaterStep” for that application are available.
- Phenotyping – Different plant varieties are susceptible to the amount of water available. The CWSI camera will help you determine how often the plants of a given species are in water stress, compared to plants of other species.

Crop is exposed to high levels of water stress, dries up.
The yield can be expected to be very low without corrective measures. There is a high probability that without irrigation crops will wilt.

The plant is exposed to considerable stress from lack of water.
Potential revenue is declining and corrective measures should be considered. Irrigation for higher yield should be considered if possible.

Crop is practically free of water stress.
No corrective action is required, a high yield can be expected (unless other problems occur). In the case of water management, it is advisable to consider whether crops are irrigated too much.
**CWSI**  
Crop Water Stress Index

**NDVI**  
Normalized Differential Vegetation Index

### Situation in a real time
- **Dead or live**
  NDVI is used to detect live green plant canopies in multispectral remote sensing data. So you can only quantify the photosynthetic capacity of plant canopies in that time.

- **Not the process but the result**
  You observe the long-term effects of stress factors and environmental conditions on the state of vegetation but it is often very difficult to identify the causes.

- **It is too late!**
  It is very difficult to make the right intervention as you cannot monitor the response quickly enough after applying the intervention. The NDVI shows the impact and result after longer period of time.

### Physiological process
- **You observe the actual crop’s physiological process under given conditions at a given time.**

### Before it’s too late!
- **You can take actions before the crops die**, ie when the stress is already occurring but the process is still reversible. The effectiveness of the intervention can be evaluated immediately after applying it.

### Water wasting
CWSI is very low. Water could be better distributed over the land or saved. No drought effect.

### Under the correct irrigation
The water stress level corresponds to the current situation (sunny day, no precipitation). Irrigation helps prevent crop damage and works properly.

### High level of stress
The irrigation system is not functioning properly and part of the crop is wilting. High level of water stress.

### NDVI Index range 0.33 - 1
- **Healthy**
  Crops are feeling better or worse, but it is not clear from the NDVI map why and whether they are currently under stress. Any corrective action to improve their condition will not be reflected quickly in the NDVI picture and will be difficult to evaluate.

### NDVI Index range 0 - 0.33
- **Dead crop**
  Crop has already died and it is impossible to tell from the picture how this happened and what intervention would help. Corrective intervention does not exist.

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