Low-cost thermal field mapping

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Keywords: Thermal map, temperature sensor, Arduino Uno, water stress.

This project uses several MLX90614ACF infrared temperature sensors integrated with an Arduino Uno microcontroller and a SD card to make a thermal scan of the field. This system is attached to a 24 meters horizontal bar that is pulled by a tractor Cardan axis. The infrared sensor can detect the thermal radiation emitted by objects nearby and then determine its temperature. The data acquired is sent through I2C-BUS serial communication to the microcontroller and stored. With all the field data stored, the result is a thermal map of the field. With the generated thermal map, the plants and field status can be evaluated. Therefore, it is possible to show which of the crops is more adapted to water stress. This project is originally designed to be used in rice genetic enhancement fields, but it can be used for other purposes, for example, to verify if any part of the tillage has a disease, when comparing the thermal signature of the species with the thermal map. This technique has great advantages because it is a non-contact, non-invasive and fast way to measure the temperature of crops. Another advantage is its low-cost, the hardware costs less than $ 200.00