

Department of Architecture | College of Design | CBER | Iowa UrbanFEWS  
Acknowledgements | Special thanks to Ulrike Passe and Janette Thompson  
Oluwatobiloba Fagbule | 5th-Year Architecture.

## The Impact of vegetative wall coverings on building cooling load reduction. -Summer 2020

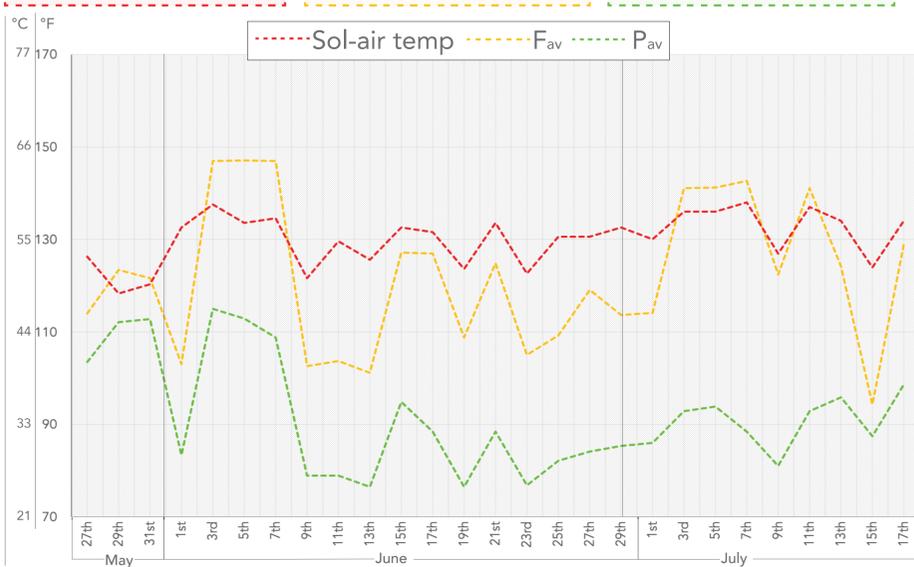
- The research studies and shows the measured thermal data of the impact of vegetative shading.
- The plants being grown include: Tomatoes Sakura, Wild Plumb, Virginia Creepers.
- The Mobile Diagnostics Lab (MDL), a trailer that collects thermal data from heat flux sensors and thermistors inside its walls.
- The Thermal Images taken with the FLIR Infrared Camera and data analyses from the pictures with a FLIR Software. Images were taken between 11am to 1pm every other day.
- The results were analyzed using direct comparison and sol-air temperature calculations.
- The results so far show that the facade surface beneath the plants have a lower temperature (about 10°C-30°C) than the exposed facade.

### Sol-Air Temperature

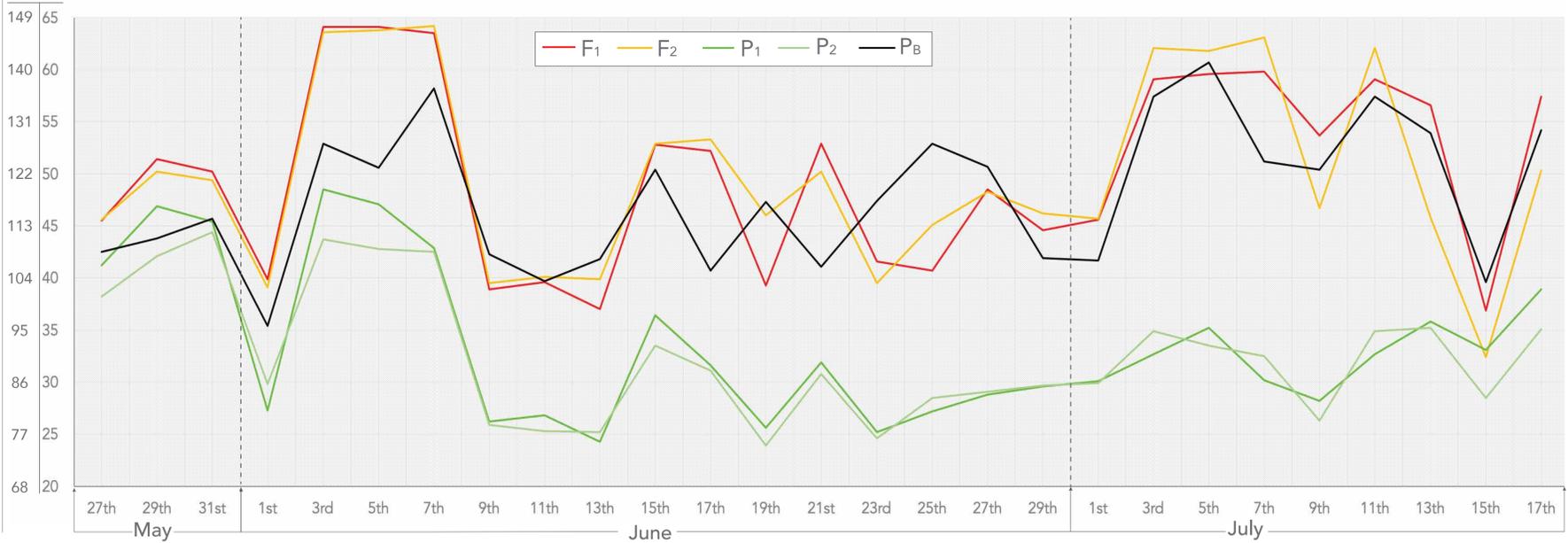
**Sol-air Temp.**  
-The calculation of the Sol air temperature using the outdoor temperatures for each day data was taken

**F<sub>av</sub>**  
-The average of the temperature data of the trailer facade surfaces taken for the first graph

**P<sub>av</sub>**  
-The Average of the temperature data of the plant surface taken for the first graph



### Surface Temperature Over time



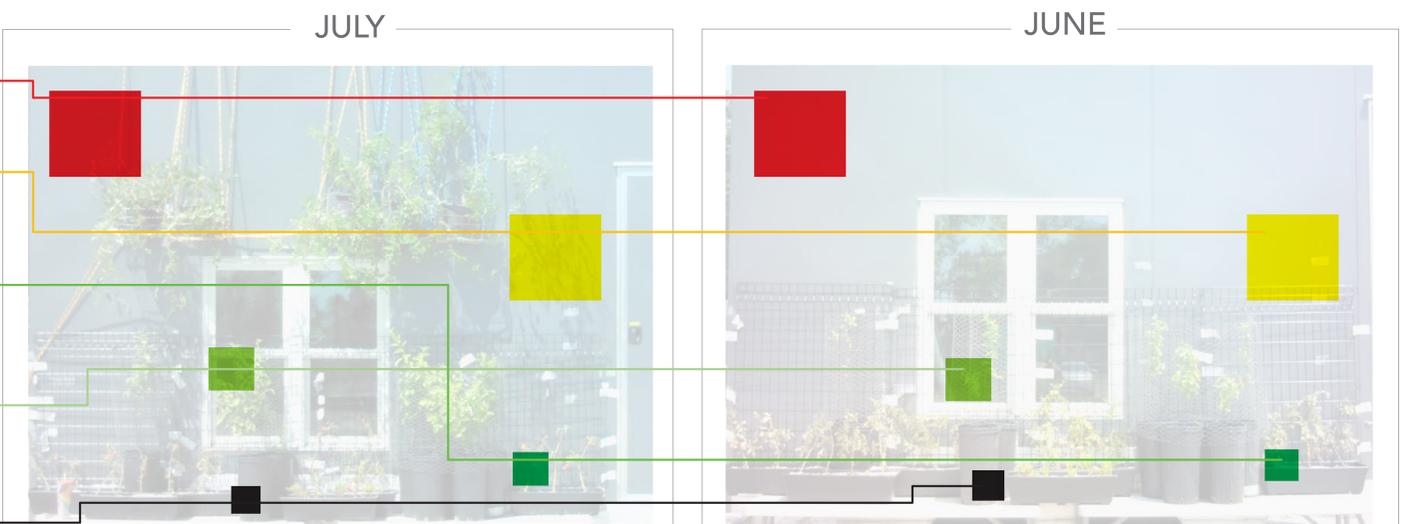
**F<sub>1</sub>** -Facade Surface one- temp. data from the Flir infrared camera for the surface of the trailer

**F<sub>2</sub>** -Facade Surface two- temp. data from the Flir infrared camera for the surface of the trailer.

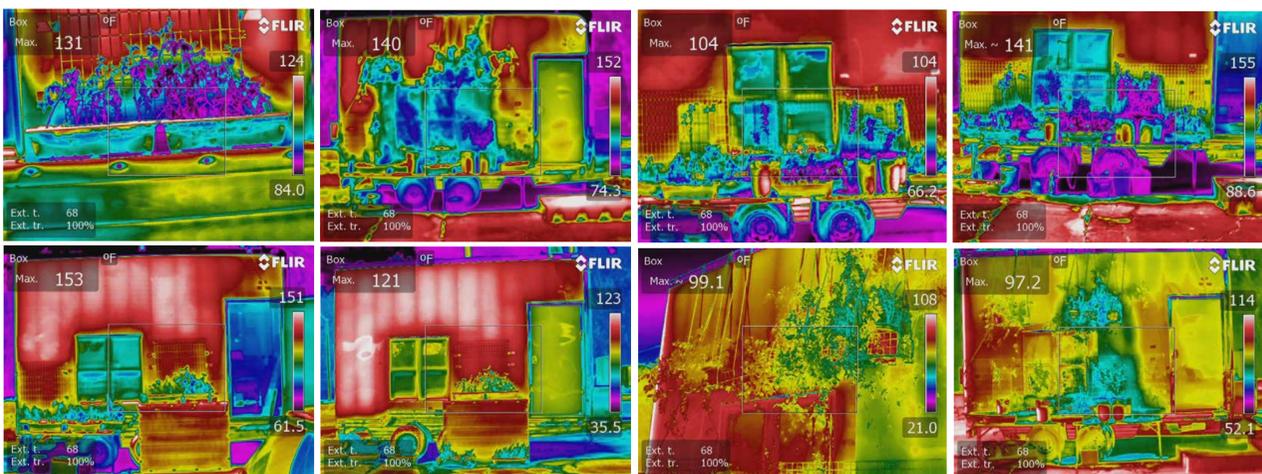
**P<sub>1</sub>** -Plant Facade Surface one-temperature data from the Flir infrared camera for the surface of the plants.

**P<sub>2</sub>** -Plant Facade Surface two-temperature data from the Flir infrared camera for the surface of the plants.

**P<sub>B</sub>** -Plant Box Surface one-temperature data from the Flir infrared camera for the surface of the plant potters.



### FLIR Infrared Camera Pictures



### Process Pictures



### Current Look

