

Saffron and Solar Farms: A Win/Win for the Environment and Agriculture

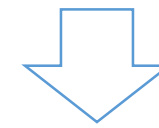
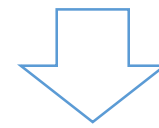
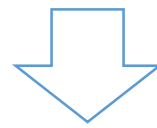


**Bruce L. Parker, Margaret Skinner and Arash GhalehgoLabbehbahani
North American Center for Saffron Research and Development
661 Spear Street, Burlington, Vermont USA 05405-0105**

<https://www.uvm.edu/~saffron/>

Contact: mskinner@uvm.edu Tel: 802-656-5440

December, 2018



Three different locations of experimental units (**in the aisle, under the solar panels and around the perimeter**) served as the treatments.



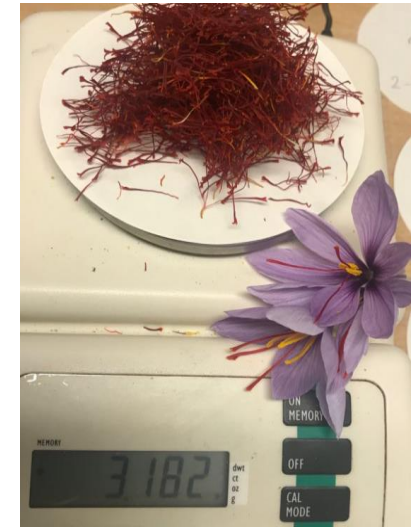
Twelve wooden garden raised beds (3'×7'×10") were established at the solar saffron research site (New Haven, VT).

Eight cubic yards of potting soil were supplied from a local compost company and the saffron corms (9/10 cm in circumference) were planted in early September at a **depth of 6 inches with density of 9 corms/sq.ft.**



The saffron flowering started at mid-October

After separating stigmas from other parts of the flowers, they were dehydrated at **50 °C for 60 minutes**.



The weight of dry stigmas and stamens were recorded and the yield was calculated based on the number of flowers and observed average weight of saffron per flower.

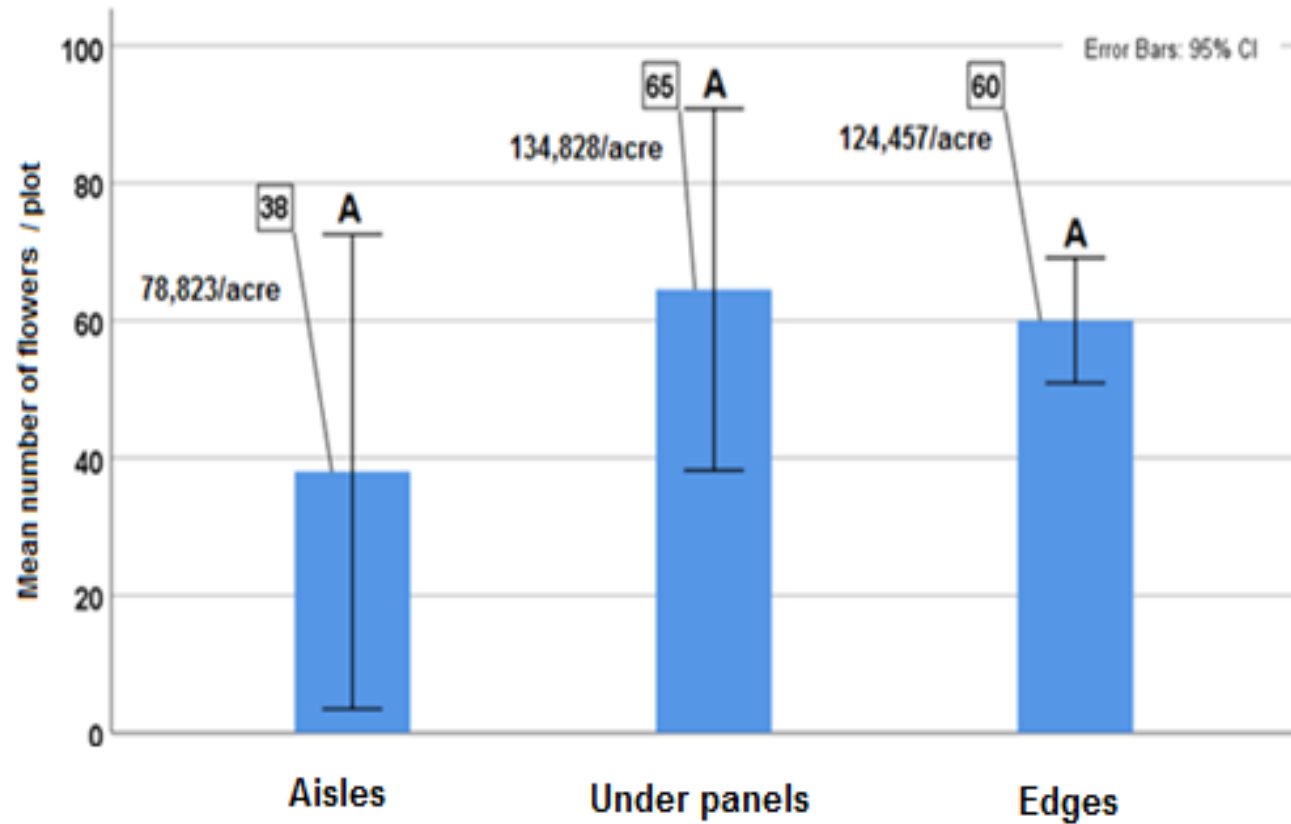
In Nov, 2018, photos of the foliage were taken and analyzed by the Canopeo app, using a Smart Phone camera (iPhone 7) (resolution of 750 pixels/inch (PPI) 326) to assess differences in foliage density.



Results.

Number of Flowers.

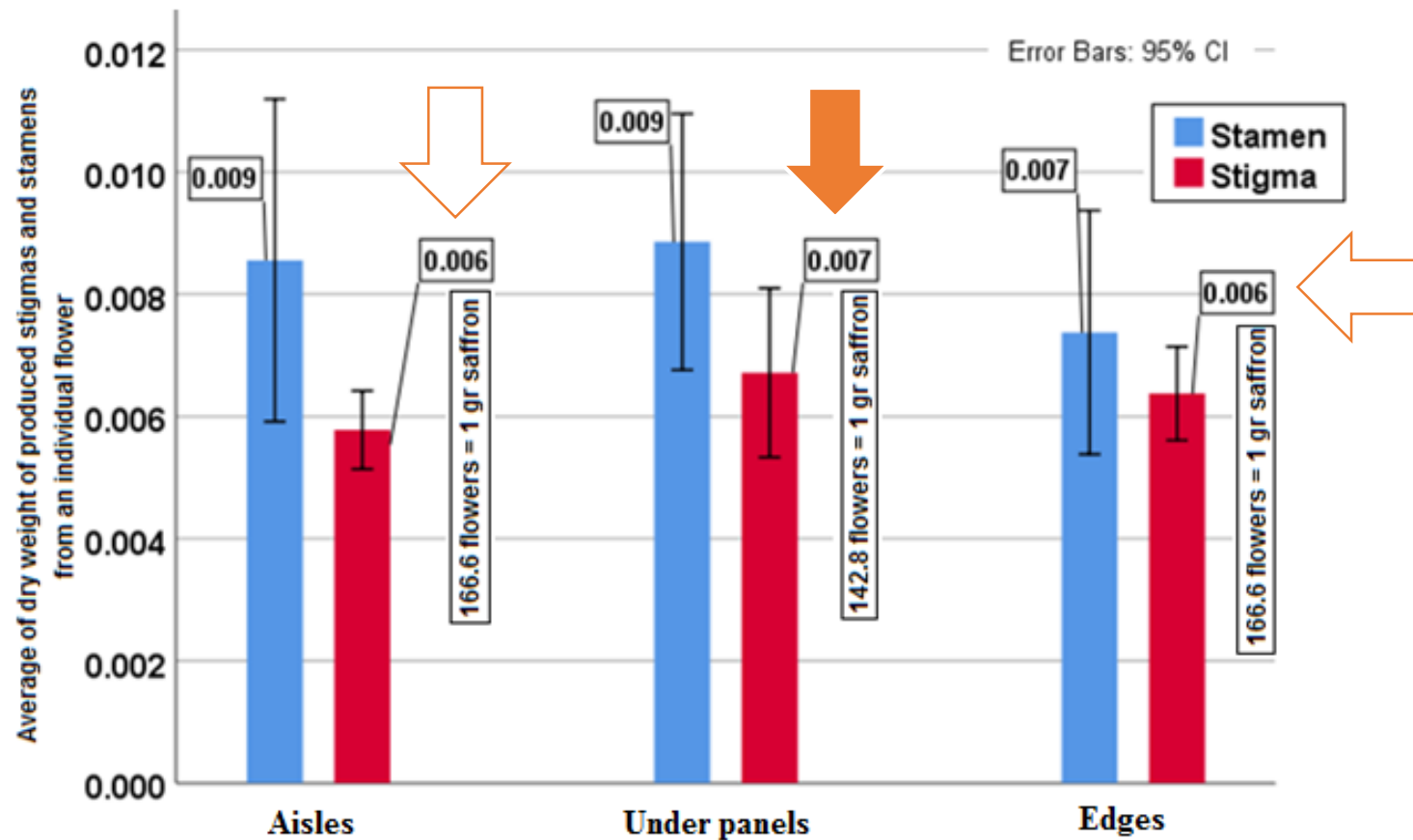
The first year results showed that the mean number of flowers produced in the plots located under the solar panels were slightly higher than other treatments.



Results.

Stigma and Stamen Production.

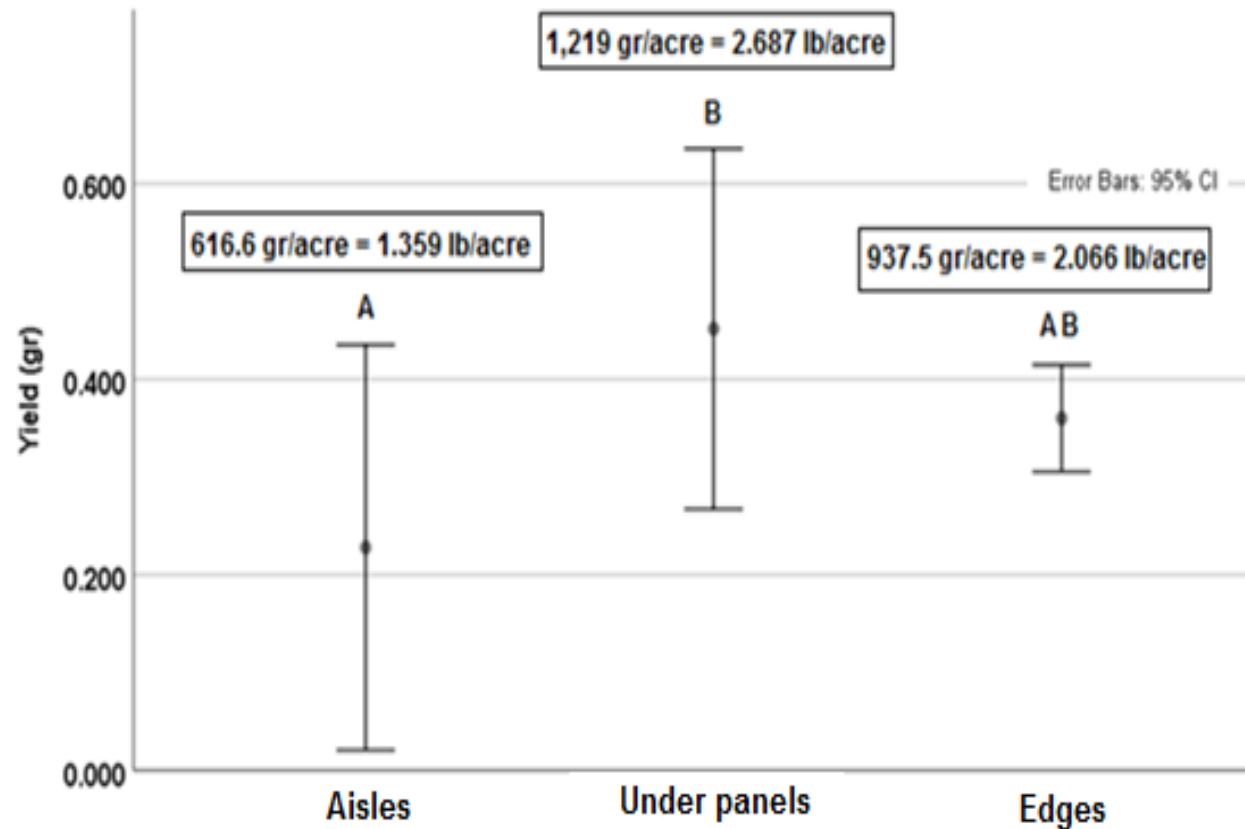
to produce a gram of dry saffron from the under solar panel plots 143 flowers are needed while 167 flowers are needed in other plots.



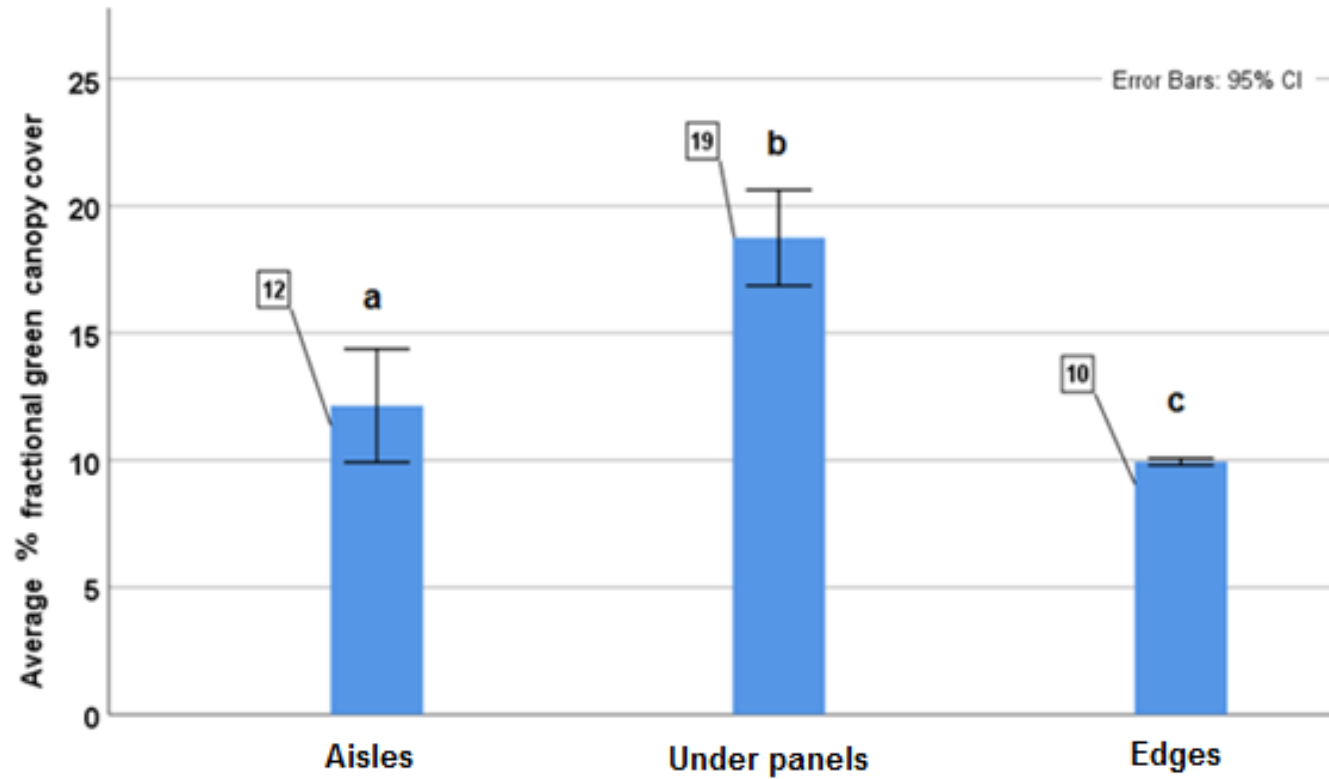
Results.

Saffron Yield,

In two of the three treatments, the average saffron yield was > 2 lb./acre. This amount is higher than the first year yield of saffron in some other saffron producing regions.



Results. Green Canopy Cover.



CANOPEO





Over Wintering.



Over the winter, the snow cover serves as an insulation layer to keep the heat around the plant.

Over Wintering.

The panels restrict the snow cover on the beds and may affect the quality of secondary corms and number of flowers for the following years.



Increasing the productivity of solar farm with the specialty crop production was the goal of this project and we must repeat the trial and record data in the second year of the experiment to illustrate all the dimensions of saffron growing at the solar farms in VT agro-ecosystems.



Future plans. In June – July 2019, when the plants are dormant, the saffron corm samples will be taken to record the number, size and weight of secondary corms that are produced per mother corm. Assessing the number of flowers and saffron yield will be the goals of this trial in the second year.

Acknowledgments. Support for the UVM Saffron Research Project has been provided by the Univ. of VT College of Agriculture & Life Sciences; Peck Electric; Roco Saffron.