

S.T.E.V.E.N.

Sustainable Technology and Energy for Vital Economic Needs

414 Triphammer Road, Ithaca, NY 14850 USA. Email jv19@cornell.edu.

Website: www.lightlink.com/francis/stevenhomepage.html

N E W S L E T T E R 2 0 1 4

GREETINGS! Along with our wishes for Good Health and Good Work in the New Year, here is the S.T.E.V.E.N. Foundation Newsletter for 2014.

SUPPORT FOR SOLAR OVEN WORK IN NICARAGUA: During the past year our work centered on promoting the use of SOLAR COOKERS, the most “user-friendly” of the technologies developed by S.T.E.V.E.N. [For the others, see our website: www.lightlink.com/francis/stevenhomepage.html As in several years past, a group of Cornell students from the College of Engineering spent their spring break in Nicaragua, working with the “Mujeres Solares de Totogalpa,” a group of rural women who both promote and practice solar cooking, even running a solar restaurant near the Pan American Highway. S.T.E.V.E.N supported this collaboration with a financial contribution. At Cornell the students are part of a solar lab under the instruction of Mr. Tim Bond.

Although it is Tim who supervises the students on a day to day basis, Francis Vanek, who teaches in civil engineering, also interacts with this lab and assists with the student projects by attending student presentations and giving feedback on their work. In this way the many years of S.T.E.V.E.N. Foundation experience with solar cooking and baking benefits the students who are working on various design problems related to solar cooking. One of the highlights of 2014 was a visit by a representative of the Mujeres Solares, Reina Lopez, to Cornell and Ithaca to meet with students, faculty, and Ithaca community members so as to have an exchange of ideas between Nicaragua and Ithaca. Prof Susan Kinne of the National Engineering University of Nicaragua also accompanied Reina. Francis was able to participate with the visit and to help host Reina and Susan.

SOLAR COOKER RESEARCH IN ITHACA: Francis Vanek has been keeping a record of solar cooking in Ithaca since 2009, and now has some results to report. Records are kept in terms of “runs” of solar ovens, in which each instance of cooking a dish in a solar oven is a run, so that it is possible to collect multiple runs in a single day.

The total as of the end of 2014 was 282 runs at Francis’ home. The rate of accumulating runs greatly increased from 2012, with the introduction of a second “Sun Oven International” oven to accompany

our homemade oven. For the years 2009-2011, the total was 98 runs (2009 = 31, 2010 = 34, 2011 = 33), so the additional 184 runs came in the last three years.

Figure 1 shows the runs by month for the years 2012-2014. As shown, the runs start in April and end in October, with the productivity of solar cooking rising and falling on either side of the summer solstice, in response to the changing availability of solar energy and sunny days at 42N latitude in Ithaca. The figure shows the 3-year average for each month, and the figure for July would probably be higher, but the solar cookers were not available for this work in July 2014. Despite this fact, 2014 was the most productive year, with 69 runs, compared to 65 in 2012 and 52 in 2013. The number of runs shown are not the maximum number possible, since there were also many sunny days where we did not manage to cook, and we did not keep any record of how many such days occurred.

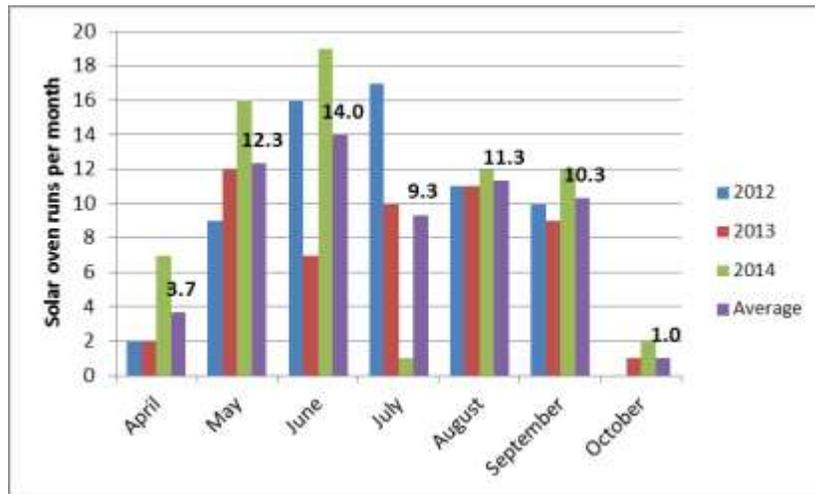


Figure 1. Solar oven usage by month 2012-2014, with monthly average values

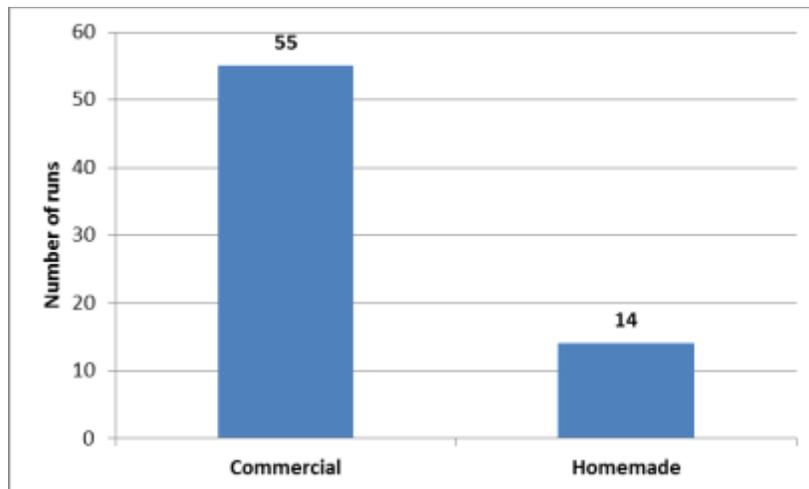


Figure 2. Breakdown of 69 runs in 2014 between commercial and homemade oven

Next, the output for 2014 is more closely analyzed in terms of oven usage and types of food cooked. Figure 2 shows that most of the runs happened in the “commercial” rather than “homemade” oven (in other words, the Sun Oven International), thanks to its easier setup and breakdown process, as well as hotter average cooking temperature. On especially busy days where both ovens were in use, we cooked the more complicated dish, or one requiring higher temperatures, in the Sun Oven, with the homemade oven used for simpler dishes such as a pot of rice or oatmeal.

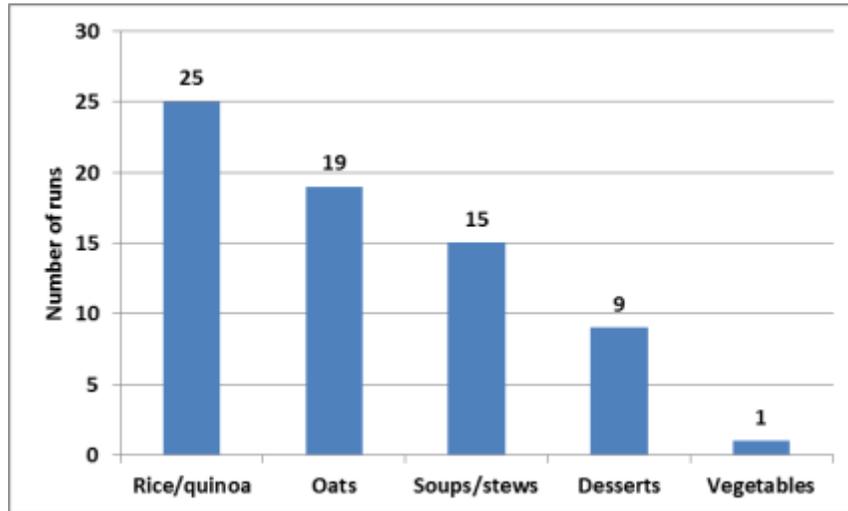


Figure 3. Breakdown of 69 runs in 2014 by type of food cooked

Lastly, Figure 3 shows how the runs of 2014 were broken down among different types of food. The simplest foods were the most common, namely rice, quinoa, and oats (altogether 44 runs), which take the least preparation but also taste very good when cooked in the solar oven. There were also 24 occasions with soups, stews, and desserts, when more preparation time allowed for a more complex dish. The entry of 1 run for vegetables does not mean that solar cooking is not suitable for vegetables, rather, it means that for the most part we cooked vegetables into soups and stews rather than cooking them by themselves in the solar oven.

We are committed to keeping records of the number of runs into the future and will report on what trends emerge in a later newsletter.

FREE MYLAR OFFERING: In spring and early summer we offered limited quantities (up to 20 sq. ft.) of our aluminized, UV stabilized Mylar plastic free of charge, including shipping in USA. We received many inquiries and sent out 13 packages, including to Canada where shipping was paid. Donations to S.T.E.V.E.N. supported this project. We were pleased with the publicity received, also through the newsletter of Solar Cookers International [SCI].

FREE MYLAR, YEAR 2: We are pleased to announce that our offering of up to 20 sq. ft. of Mylar, plus shipping for free, will be repeated this year in 2015, while supplies last. Those interested must send a postal mailing address, not a box number. This program will end, in every case, by July 2015.