

# Living Energy Farm

## May - June 2017 Newsletter

### Upcoming Workshops

**Please RSVP [livingenergyfarm@gmail.com](mailto:livingenergyfarm@gmail.com) if you plan to attend.** All workshops begin at 1PM and are held at 1022 Bibb Store Rd, Louisa VA, 23093 (at LEF) unless otherwise indicated.

#### ***Harmonious Relations***

*Many groups struggle with maintaining a positive decisions making environment. Gilgamesh, intern at LEF, will lead a workshop on Harmonious Relations based on his training and experience using various modalities of group decision making. Sat, July 15, 1 - 4 PM, at LEF.*

#### ***Cooking Without Fossil Fuel***

*Misha and Deanna, members at LEF, will lead a class in meal planning and cooking without fossil fuel at LEF. Participants will prepare a meal to enjoy using LEF's home-grown vegetables. Sat, July 22, 2 - 5 PM, at LEF.*

#### ***Sustainable Diapering***

*How do you diaper children sustainably, without disposable diapers, or even a washing machine? Come see how its done. Misha and Deanna, proud parents of a 1 year old and a 4 year old, are well qualified to lead this workshop. Sat, July 29, 1 - 4 PM, at LEF.*

#### ***Solar Batch Collector Work Demonstration***

*At LEF, we try to collect useful junk. We happen to have the parts laying around to make a batch collector or two, the simplest, cheapest form hot water heater. We will put one together, not just talk about it. Come and see how it's done. Sat, August 5, 1 - 4 PM, at LEF.*

#### ***Seed Saving One, Wet Seed Processing***

*Want to know how to process and save seeds from your garden? Debbie (LEF's own seed farmer) will lead a workshop in saving seeds from vegetables that must be "wet processed" like melons, tomatoes, cucumbers and peppers. (We will do a workshop on saving seeds like corn, beans and okra later in the fall.) You can't just squeeze the seeds out of a tomato and plant them. A fermentation and cleaning process is necessary. We'll show you how. Sat, August 12, 1 - 3 PM, at LEF.*

#### ***Bicycle Maintenance 101***

*At LEF, we love our bikes. But you have to take care of them if you want to them to take care of you. Learn how to do both routine maintenance and repairs. Sat, August 19, 1 - 4 PM, at LEF.*

#### **Farming and Building at LEF**

With the onset of farming season, we have been busy at LEF. We expanded our seeds operation by about a third this year. Our seed crops are mostly looking great. The orchards and new berry plantings are also in good shape, though it is an effort to keep them watered. The ducks, the bees, and the humans inhabiting our land all seem to be doing well.

Our goal at LEF is to put together a package of tools and techniques that can sustainably support a village, and to do so at a minimum of cost and complexity so our model can be more easily spread. This year we planted wheat and oats to add to our food supply. The intent is not to simply produce a small amount of grain. It is to see how producing food fits into our zero fossil fuel economy. Can we grow and harvest our food running woodgas or turpentine tractors? How complex or expensive is such a proposition? We have not made much progress with the woodgas tractor in the last couple months, owing mostly to a frustrating succession of mechanical breakdowns. Though we are still doing heavy tillage with fossil fuel, we have started harvesting our grains. We cut our wheat field with scythes and threshed the grain with a shredder (like people use for shredding leaves in their yard). Then we ground the grain into flour with our solar-powered grain mill, and Deb baked a most delicious and satisfying bread in our solar oven. Though the whole process is not what one would call efficient, it has been instructive and fun. We learned that we can grow good quality wheat for making bread. We learned that a small shredder (which could easily be powered with direct-drive solar electricity) works for threshing. But we lost a fair amount of the grain in the harvesting and cleaning process, and it was slow. So we have spent quite a bit of time looking into old American combines. In China and India, numerous companies are making combines the size of riding lawnmowers. Perhaps, if all goes well, we can make progress in the next few years in figuring out how to run small tractors and harvesting machines sustainably at the village level.



*Deanna and Olan in front of our "drought stressed" Kentucky Rainbow corn. Photo credit Sunnelin.*

The question of how much food can be grown with organic, sustainable methods is a large one. Each year as we grow bountiful, organic grains and seed crops, we feel more confident that organic farming can feed humanity better than industrial chemical agriculture. Last year we grew Florianni Flint corn. The harvest was fantastic. This year we are growing Kentucky Rainbow, an heirloom dent corn. Industrial agriculture using hybrid GMO seeds is enormously productive under ideal conditions. But under difficult growing conditions, heirloom seeds may actually be better. The old dent corns (like Kentucky Rainbow) are famous for their drought tolerance. Sure enough, we have been having a dry growing season, and we have watched the neighbors' hybrids shrivel while our Kentucky Rainbow looks like a lush corn jungle. (See photo.)

Most of such building energy as we might possess at the end of the farming day has been going into repairing and completing various parts of our main house and surrounding infrastructure in preparation for bringing more visitors onto the land in the coming months. We have had a few leaking pipes and broken solar gizmos that got left behind in the push to make our main house livable. Now we are fixing those issues. If all goes well, we should be ready for doing open-houses and other promotional events in the fall. Stay tuned.



*Misha, Sunnelin and Olan demonstrating family transportation at LEF. Sunnelin is good at pedalling!*

batteries. He has a working prototype. The electrical storage capacity of his prototype is low, so he is working to add more nickel and iron plates to expand the storage capacity of the batteries. If this technology works, and we can build it cheaply, it could give us a way to provide lighting for a lot of people around the world.

### **Taking the LEF Model to Other Locations**

If we hope to expand the LEF model, we need to know where we are going to take it. We have been working



*Nickel and Iron plates for a homemade NiFe battery.*

### **Zero Fossil Fuel Transportation?**

Sustainable transportation is an issue that a small community like ours cannot address alone. It is a wider societal choice to build good train and bus systems. But for local transport, we do have options. Do you have to have a minivan to carry kids around? Not if you live at LEF! Check the photo.

### **Low Density Nickel Iron Batteries**

Eddie (our technical intern now resident in Pittsburgh) has been working on low-density nickel iron



*Prototype NiFe battery. Cheap, durable, homemade? We hope so.*

with Kate (see previous 2 newsletters) to find sites where we might use what we have learned at LEF to help people in the non-industrial world. Kate has extensive experience working with development and aid organizations around the world. Kate has been traveling in Latin America, and looking for sites where LEF can help. This seems to make more sense than locations far away. Kate made some good connections, but we have not yet picked a specific site. As we mentioned in the last newsletter, we will stay in touch with Tom (from New Community in Harrisonburg) as he travels this winter to the Dominican Republic.

### **Advancing Zero Fossil Fuel Technologies**

We have continued to bring in new tools and organize our shop. We added a nice, old, heavy duty drill press, powered by direct drive high-voltage DC power as we like to do. We also added a winnowing fan and a heavy duty bench grinder to our collection of direct drive tools. We love our direct-drive! Just run a wire from a set of photovoltaic panels (in series to produce high voltage) straight to the motors, and you can do anything you want during daylight hours. It is a simple and cheap setup.

We have continued our research concerning a low-cost high-temperature solar storage system for cooking. We have discovered a material that we think will make a big difference. In considering high temperature solar storage, we have looked at both tracking collectors and a trough system that needs no tracking. The trough is simpler, but leaves a long collector pipe hanging in the air. As the pipe heats, a lot of heat is lost to the air around the pipe. It would make sense to put some kind of insulating glass around the pipe. But the material would need to be able to withstand very high and fluctuating temperatures well beyond what normal or tempered glass would handle. The high-temperature glass used on woodstove doors is much too expensive. And we would either need a fancy frame to hold the glass around the pipe, or some kind of glass tubing. Finding very high temperature, reasonably priced, large diameter glass tubing just was not happening. Then we found it. The original Pyrex cookware was made with something called borosilicate. We have found that we can get borosilicate cheaply in large diameter tubings. This should make a huge difference in our high temperature solar collector.

We are also re-assessing whether to use steam or oil as the heat transfer medium. Steam has the advantage of being very cheap as it is just heated water. It has the disadvantage of needing pressurized storage tank(s). Oil has the advantage of being capable, at least in theory, of handling and storing much higher temperatures in non-pressurized vessels. Industry uses various forms of modified mineral oil that they call "heat transfer fluid," or HTFs. The market for HTFs has been evolving rapidly. In just the last few years, more and cheaper HTFs have become available. In our case, we could use a large heating oil tank, pack it full of small, clean rock, and circulate HTF through it. That's the design concept at least. Hopefully, after we finish the current round of infrastructure improvement, we can focus on this project.

### **LEF's Role in Addressing the Environmental Crisis**

The motivation for starting LEF is based in the fact that communities have the potential to be powerful models of sustainable living. You don't have to worry about all the crazy expense and technology that goes into efficient automobiles if you don't drive to work. Communities can share resources and integrate their systems of energy use and production in a way that radically changes how resources are used. One person can cook for others, making solar cooking viable. A source of energy, such as high voltage DC coming from PV panels, can be tied to numerous machines. At LEF, we are even building an air-conditioning system (not yet complete) that uses the irrigation water headed to the fields. The operational cost of this air-conditioning system is zero. The installation cost involves a few hundred dollars worth of pipe. You can only do things like that on a community level.

In conceiving of LEF, we were very clear that we did NOT want to be a technology development center. Developing effective new technologies can be very expensive and time consuming. Our intent was to simply put together the proper mix of tools that had been developed elsewhere. Our innovation was supposed to be in the integration of existing technologies in a community setting. We are dependent on these technologies, so we would be daily testing their real-world viability. Our basic residential design is working great. Our heating and integrated DC electrical systems are fantastic, and now we are hoping to support other communities, in the U.S. and abroad, put together similar systems.

Other aspects of our project have proven more challenging. We have learned that we simply cannot buy all of what we need to live without fossil fuel. Our cooking setup relies heavily on rocket stoves. That is not a great solution for Americans, or for people living in crowded cities around the world. We are hopeful that the aforementioned high temperature storage systems, perhaps combined with biogas or a small-scale boiler, represent a more widely applicable and attainable goal.

Other goals appear to be more difficult. Farm traction (tractors, draft animals) is proving to be something of a can of worms. Our woodgas is not working all that well just yet. Even if it does, it is not at all clear if we can make it as cheap, simple, and reliable as it would need to be if it is were to be widely adopted. We are learning more than we thought we would have to about internal combustion engines, and realizing that powering them with farm-grown fuels is a complex question -- a question which we may or may not have the resources to answer. Ideally, we could work with other organizations seeking similar goals. We have been trying to do that. Apart from the fact that every organization has a different personality, very few share our goal of keeping things cheap and simple so that the results can be adopted by less advantaged people.

All of this begs the question, what are we doing? Raising our kids and taking care of our own community is a significant undertaking to which we have to give priority. Beyond that, we have to ask ourselves the question of what are our primary goals? Is our most important role advocating a sustainable lifestyle among our peers in the U.S., and providing a living model of what we are talking about? Or will we have more impact supporting people who are already living in villages outside of the U.S.? This former group is perhaps the most important in terms of their environmental impact, whereas the latter group might be more receptive (?) as they already share a village lifestyle. And how much time and resources should be put into improving technologies?

Our current plan is to keep doing what we are doing. We will be opening our doors more in the coming months for events for people to come and see first hand what living without fossil fuel is like. We will continue our outreach efforts abroad. That project is not moving quickly, but we will keep trying. We will certainly continue improving the technologies that we need that seem reasonably attainable (cooking, clothes washing). It is less clear what will happen with issues like farm traction. We need help with that one.

There are a number of devices and projects hanging about LEF waiting for skilled and motivated people to work on them. Eddie was a huge help to us in his time here. If you have skills and are willing to get involved, we would love to hear from you. It could be in the long run that we split off a technology development project from the LEF farm. In the meantime, we want to make sure our farm continues to prosper. The work we are doing with open pollinated seeds, food self-sufficiency, and growing naturally disease resistant fruits and nuts feels important too. If you feel like some of these various projects excite you, we would love to hear from you.

## **Articles and Stories about LEF in the Media**

Article about LEF at the Atlantic Online Magazine

<https://www.theatlantic.com/politics/archive/2017/01/anarchism-intentional-communities-trump/513086/>

Article about LEF in The Central Virginian

<http://www.livingenergyfarm.org/cvarticle.pdf>

LEF on CNN

<http://www.cnn.com/interactive/2015/09/us/communes-american-story/>

Cville weekly in Charlottesville VA

<http://www.c-ville.com/off-grid-model-environmentalism-made-easy/#.VcHobF054yo>

First video on youtube

<https://www.youtube.com/watch?v=ppTBO8d6jhY>

Second video on youtube

[https://www.youtube.com/watch?v=wdSX\\_TIYkD4](https://www.youtube.com/watch?v=wdSX_TIYkD4)

Video on vimeo

<https://vimeo.com/128744981>

*Living Energy Farm is a project to build a demonstration farm, community, and education center in Louisa County that uses no fossil fuels. For more information see our website [www.livingenergyfarm.org](http://www.livingenergyfarm.org), or contact us at [livingenergyfarm@gmail.com](mailto:livingenergyfarm@gmail.com) or Living Energy Farm, 1022 Bibb Store Rd, Louisa VA, 23093. Donations to the Living Energy Farm Education Fund are tax deductible and can be made via our website.*