

The Oil Drum: Campfire

Discussions about Energy and Our Future

Preserving Produce without Heat

Posted by [Jason Bradford](#) on December 17, 2008 - 8:27pm in [The Oil Drum: Campfire](#)

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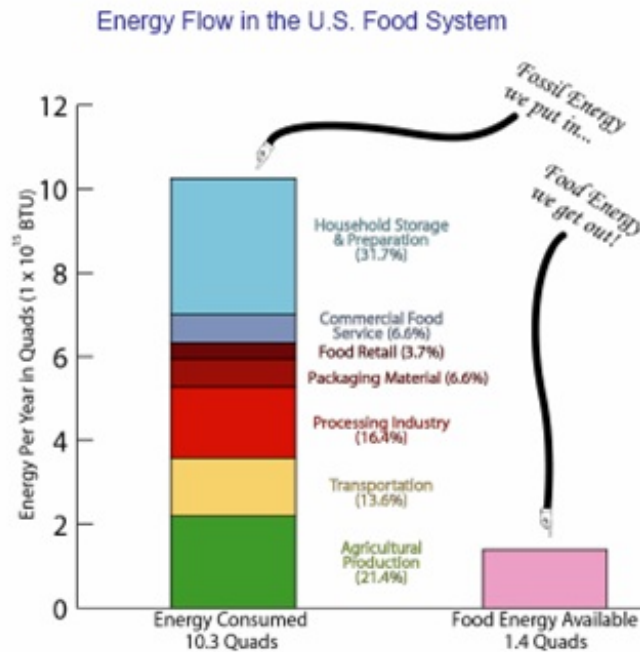
I have only been growing my own vegetables and preserving them for a few years now. The first thing I thought of was heat canning, and have spent a number of hours getting water to boil. This was not entirely satisfactory to me, however, because it just didn't seem very efficient. Heat intensive processes are inefficient at small scale, such as my kitchen.

So this year I ditched the water canning and decided to try other methods.



As a bit of background, I have been keenly interested in the fossil energy inputs to the entire modern food system and [previously wrote](#) a summary of my studies on The Oil Drum.

A key graphic from that article is re-posted here:



And a high resolution version is here:

http://local.theoil drum.com/files/FoodEnergyUse.lg_.jpg

Clearly, much energy is invested in processing fresh food to be stored for later consumption. A lot of energy is also spent getting processed food into stores and homes. I am generally in favor of local economic systems, as these cut down dramatically on transportation demands. But local doesn't have to mean within your own home, and for some kinds of work ultra-small scale may be counter-productive. I don't want the advantages of shortened transport distances eliminated by engaging in a high energy processing method.

For example, it may be *less* energy consuming to buy bread from the store, which may have been baked a hundred miles away, than to fire up your own oven for a single loaf. Perhaps ideally there's a bakery in every neighborhood. But the point is that I suspect what is true for bread is true for many household processes.

So, back to fruits and vegetables. I have access to a big garden and local farms with excess supplies of fresh produce. I have radically shortened the supply chain, and now I want to perform preservation work in my home kitchen using this home or locally grown food. What methods don't require high, and likely fossil fuel produced, heat?

To address this precise question, I opened the book [Keeping Food Fresh](#) and basically followed their guidelines for drying, lacto fermenting and preserving in olive oil. They don't have a single chapter on water bath canning, and in fact start with examples of how to store food in the ground or cellar. In other words, the first rule of thumb is avoid the need for processing altogether.

When planning my mini-farm and garden, I consider the availability of produce year-round and grow crops that store in their natural form or do fine outdoors in our winters. I live in northwestern CA, at ca. 40 degrees latitude at 1400 ft elevation. It is snowing right now, which happens a few times each year.

In mid December, for example, these were the crops available to my CSA members that were harvested the same day: carrot, parsnip, Jerusalem artichoke, leek, chard, kale, and tree collard.

And these were the crops grown in the summer and pulled out of passively cooled storage: onion, potato, garlic, and winter squash. I also distributed a jar of solar-dried tomatoes to each customer.

Here's what the baskets looked like.



Okay, back to the subject of preservation. My favorite is drying. Not everything does well with drying, but some of the most abundant fruits and vegetables, such as apples and tomatoes, perform well. This year my farm devoted a lot of effort towards drying and the associated equipment. In California I can take advantage of low summer humidity. Many foods can simply be placed on screened trays outside (see top image). Towards the end of the summer and early fall as the day length shortens and relative humidity increases, drying may require more concentrated heat. A couple friends of the farm build specialized food drying cabinets with a heat collection chamber, and these did a fantastic job.

This is what one of the driers looks like. The black box at the top holds the screened trays of produce. The slanted front piece is a heat collector. Here is a good web source for descriptions and plans of [solar cookers, dryers, root cellars and stills](#).



(Caution, please don't drool on your keyboards when viewing the images below)

While you can't taste the results of all this work, here's what the various jars in my pantry look like.



These are solar-dried fruits and veggies. High acid fruits and vegetables maintain their nutrient quality when dry, and of course these are very light weight for storage and transportation. Shown are onions, tomatoes, pears and peppers.



Lacto fermentation is a fascinating process. All you need is salt and chlorine free water. Here are examples of pickles, a vegetable medley including beets, and shredded zucchini. Nutrient levels in low acidity vegetables are kept high by lacto fermenting.



Olive oil is a more expensive preservative. But the oil isn't lost, just borrowed while preserving and becoming a flavored oil when the vegetables are consumed. Many vegetables are sauteed briefly in vinegar before storage in oil. Shown are sweet pepper, tomatoes and a vegetable medley including carrots. Onions and garlic and herbs are often mixed into these.

(Confession time: When I am supposed to be making dinner I sometimes get caught standing by the counter for several minutes at a time spooning the preserved-in-oil veggies onto bread and spoiling my appetite. A bottle of beer is typically at the scene too.)

I am sure many readers are much more experienced than I am at low energy input food preservation techniques. Please take the time to share some of your knowledge and answer any questions that arise.

After this went on-line, I received a note from the publisher that the book I referenced is republished with a new title: Preserving Food without Freezing or Canning. It can be found in print on Amazon and other retail outlets. Link to Amazon below.

<http://www.amazon.com/Preserving-Food-without-Freezing-Canning/dp/193339...>



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