
Weber

Basic Elements -- these are the elements required to convert a Weber unit to a carbon negative Char-B-Que.
The B stands for Biochar. Total cost: $0.00

two cans -- these will be turned into iCan TLUD stove units

For more pictures of other experiments: http://www.flickr.com/photos/jockgill/

Two iCan Top Lit, Up Draft [TLUD] stoves

Hint: Measure the circumference of the can. Divide that by the number of holes you want to have in your design. Use that result as the distance between hole centers. Mark the hole centers as per the above and then make your holes.

Hint: Always make small pilot hole first and then work your way up to bigger and bigger holes made with larger and larger tools. A set of graduated nails and spikes works great. When in doubt, start with fewer and smaller holes. In general, primary air holes will be smaller and secondary air holes will be much larger. The number of holes you use and their sizes, and locations, has to be tuned for draft conditions, fuel type, fuel form factor, and fuel size.

Top can shows the primary air holes. Today's experiments suggest that 21 holes is too many and 15 is too few. Some tuning to be done to accommodate the restricted draft in the Weber unit when the lid is closed.

Bottom can shows secondary air holes. In this case there are 10, about 1/3 of the way down from the top -- classic iCan approach.

iCans in place & loaded - each iCan was loaded with 1.5 cups of wood pellets. The iCans are set on the former charcoal grate. A drip pan below the grate is highly recommended.

Note the total absence of charcoal.

iCans burning: The cooking grate is now in place, with the iCans safely between the two grates.

Char-B-Que is in process. No smoke! The lid gets well over 300 degrees F.

The lid may have to be cracked open to allow more secondary air into the system.
If the iCans go out and start to smoke, just crack the lid and relight the iCans.

Perfect Char-B-Que Chicken. Juicy. Tender. No smokey taste. And no burned bits at all.Skin was also very crispy.

Cooking time: about 45 minutes. The right iCan had more primary air holes, 21, and burned out at 40 minutes. The left iCan was complete at 48 minutes. It had only 15 holes for primary air. Tuning of the total system is important.

Biochar from the wood pellets in the iCan TLUDs at the end of the Char-B-Que. The biochar, which will be mixed with compost and then added to gardens as a soil amendment, is how carbon that was in the wood pellets is sequestered. The long term sequestering of the carbon from the biomass is what makes the Char-B-Que "Carbon Negative".

Biochar detail. All biomass is about 50% organic carbon, with a relatively short carbon cycle. The carbon in the wood pellets was pulled from the atmosphere by photosynthesis. After pyrolysis in the iCan TLUDs, about 40% of the carbon has been converted to elemental carbon. The rest as been burned and lost in the pyrolysis process. The elemental carbon has a very long carbon cycle and will stay sequestered in the soil for centuries, paying productivity dividends every year -- year after year.

Ready for the next Char-B-Que.

These pictures show that it is easy and inexpensive to convert a Weber Grill from a carbon positive charcoal burner to a carbon negative carbon producer. These same ideas can be extended to space conditioning as well -- once we invent the proper appliances.

For more on biochar, please see: www.biocharfarms.org