



How do I actually use biochar?

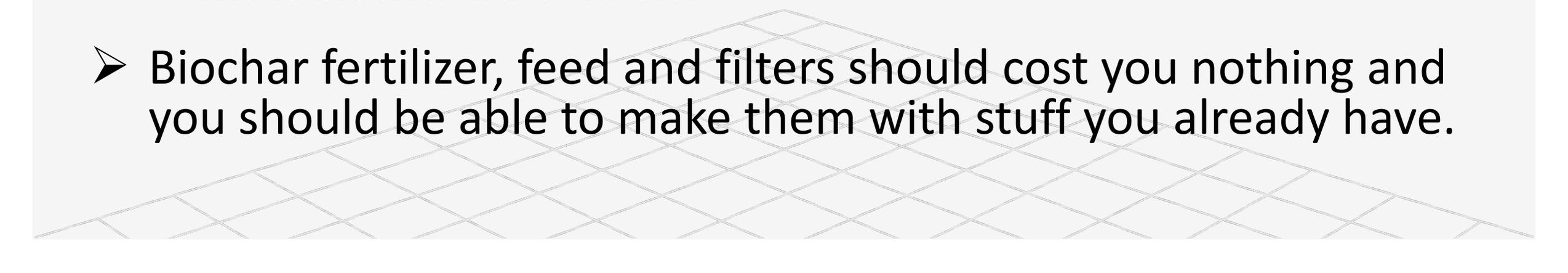
The Warm Heart Biochar Team

PowerPoint 4 in the Warm Heart
"Introduction to Biochar" series.



Biochar is easy to make and easy to use

Our aim is to teach you how you can make and use biochar yourself to improve your quality of life.

- In this class we will teach you how to:
 - Make biochar fertilizer.
 - Make biochar infused animal feed.
 - Make biochar water filters.
 - Biochar fertilizer, feed and filters should cost you nothing and you should be able to make them with stuff you already have.
- 



Making biochar fertilizer

- Technically, biochar is not a fertilizer. It is a soil amendment.
- We call it a fertilizer because the way we make it, it works like a fertilizer - only better.
- To make biochar fertilizer
 - If you are using lumpy char (for example, corn cob char), crush it to the size of corn kernels
 - Mix biochar and manure (any kind), 50: 50.
 - If you have a real forest nearby, add several handfuls of rich, forest dirt and leaf litter to the mix.
 - Ask the little boys to pee on the pile and mix until the pee runs out on the ground.
 - Leave for a day and then apply.



A note about compost

- Compost is great stuff. If you are already making it, don't stop.
 - But please enhance it with biochar from now on.
 - When you make compost, the pile emits a lot of GHGs.
 - Adding biochar will stop this.
 - When you make compost, many nutrients leach from the pile.
 - Adding biochar will capture these nutrients.
 - If you make compost, you can substitute compost for manure when making fertilizer or simply add compost to plants happier.
 - But whatever you do, whenever you make compost, add biochar!
- 



Using biochar fertilizer

- You do not use biochar fertilizer as you would chemical fertilizers.
 - Chemicals are very expensive. You use just a few grains put on top of the soil.
 - Biochar is free. You put lots of it in the ground under the seeds or around the growing plants.
- If you plant by hand with planting stick
 - Make hole with planting stick, put a handful of biochar fertilizer at the bottom, push in a bit of dirt, drop in two seeds, push in the rest of the dirt, pat down.
- If you plant in raised rows
 - Make a raised row, dig a shallow trench along the top, fill with biochar fertilizer, cover with a little dirt, plant the seeds or seedlings, push in the rest of the dirt, pat down.
- If you plant in “fertility pockets”
 - Using a hoe, make hole as wide and deep as the blade. Half fill hole with biochar fertilizer, push in a little dirt, mix more fertilizer with remaining dirt and push it in to cover seeds, pat down.

Using the stuff





Biochar animal feed

- Biochar mixed into animal feed will make animals healthier, gain weight faster and more productive
- Mixing biochar animal feed
 - For chickens, use biochar pieces the size of large grains of sand, For other animals (cows, goats, pigs) size does not matter much. (Too much biochar dust makes chicken food black and discourages eating.)
 - Add between 5 and 25% biochar to you animals' daily food ration (that is, 1 scoop in 20 to 1 scoop in 4).
 - Mix thoroughly and feed.
 - Cows really like salt and sweet. If you can, add salt (preferably iodized) and molasses to the biochar.
- Biochar is ***NOT*** a substitute for other food; it is a ***supplement***.

Biochar and happy animals



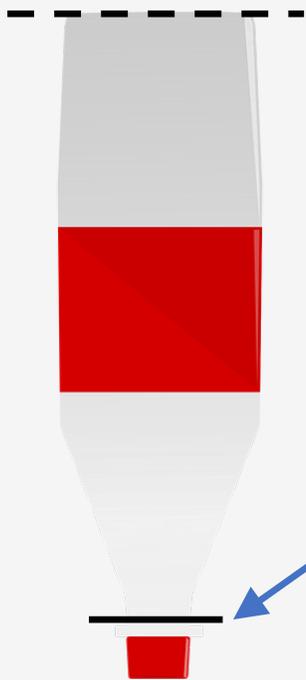


Water filters

- How many people you are filtering water for: just one; a family; a school; the community?
- All sized filters work on the same principles.
 - You put in layers of bigger gravel, smaller gravel, and sand to clear the biological contaminants.
 - The top sand layer will grow a layer of bacteria that will eat bad bugs
 - This “mat” is critical. Stir it every 2 months and do not use the filter again for 2 full days after.
 - You put in a big layer of biochar under all this to clear the chemical contaminates
 - You put in another set of gravel and sand.

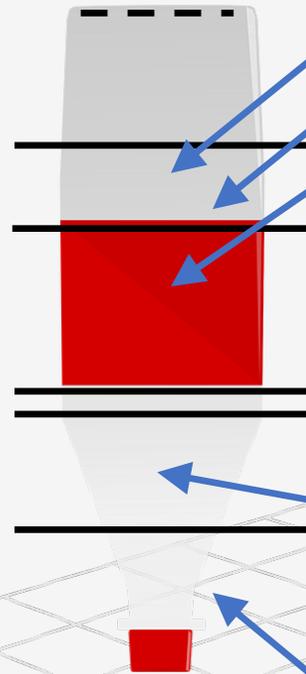
Water filter for one (take it to the field)

Cut the bottom off a 2 liter bottle



Remove cap of bottle

Add a piece of cloth at the bottom



Add sand

Add cloth

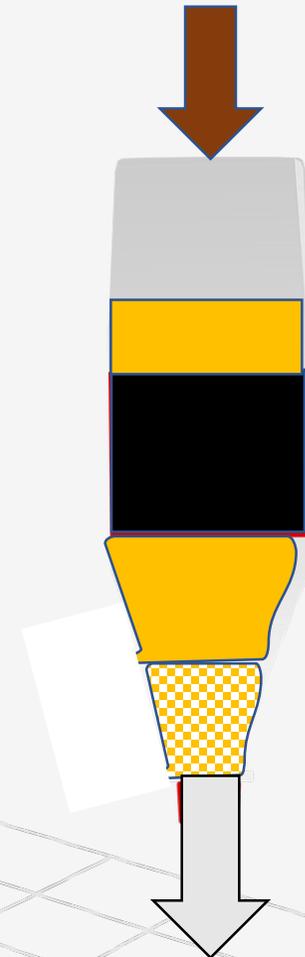
Add biochar

Lay a piece of cloth over the sand

Next add clean sand

Add small gravel as the bottom layer

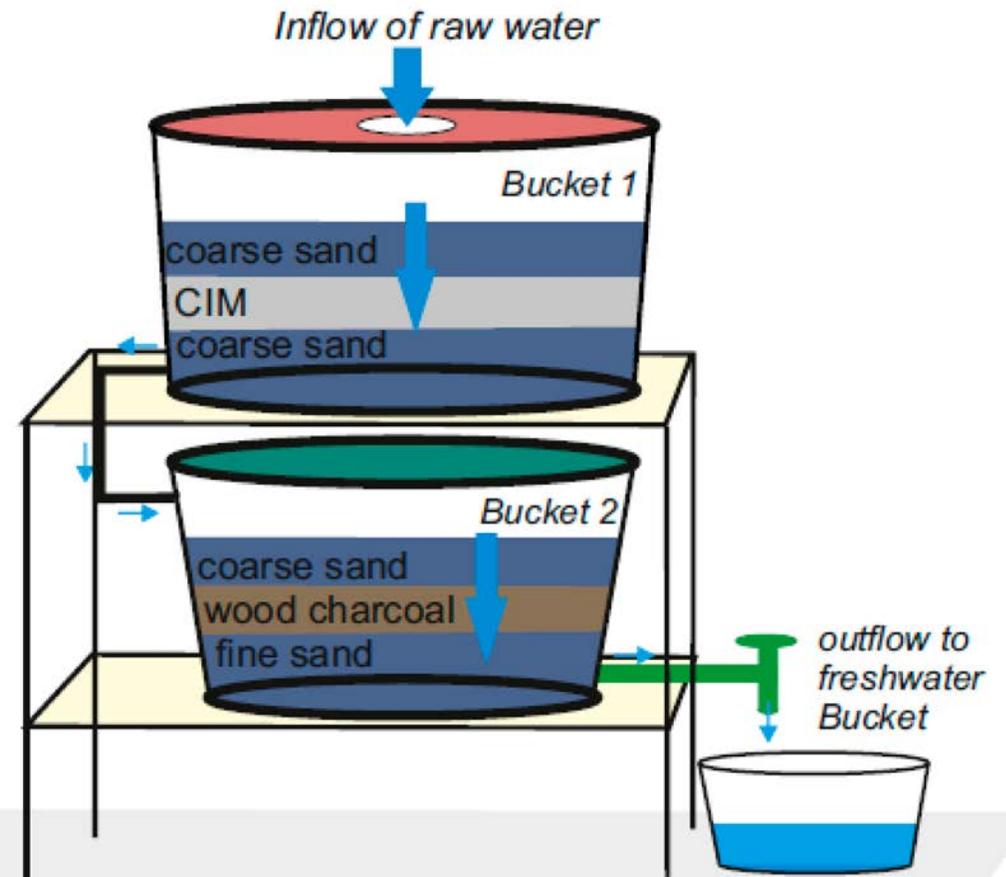
Dirty water in



Clean water out

Water filter for a family

- Start with 2 20-liter plastic tubs. Punch holes in the bottom of one and put an outlet on other.
 - Bottom tub: Add a layer of fine sand at the bottom that is about 10 cm deep. Then add a layer of biochar that is about 30 cm deep. Finally, top the tub with a second layer of fine sand. Leave the rest of the tub empty to hold water.
 - Top tub: Repeat the same process, this time with a layer of coarse sand at the bottom, biochar and a topping layer of fine sand.



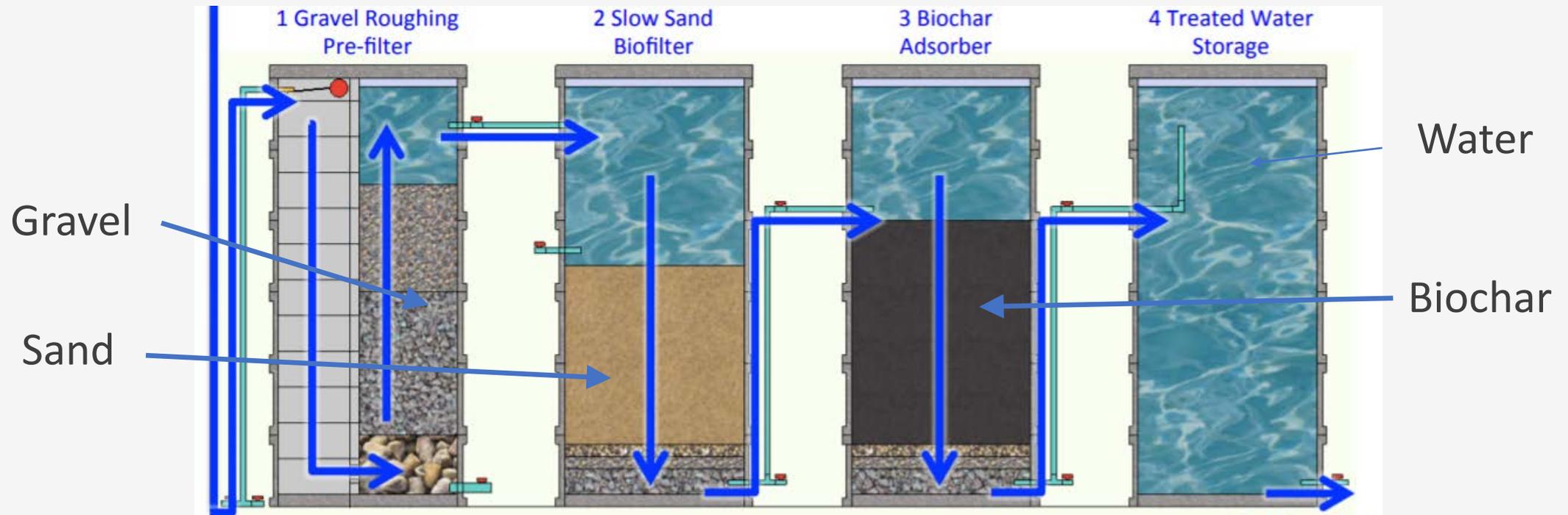
Water filter for a school

Building a water filter for a school requires more volume. The best system we know is the kind that we built at Warm Heart following designs from Aqua Solutions.

This system uses four 200-liter plastic drums. (Please be very careful with blue drums. They are often used for transporting pesticides and other dangerous chemicals. Wash them extremely well and make sure that the wash water is dumped on a pile of biochar.)



Water filter for an entire village



This filter will provide 2,000 liters per day. It requires four stacks of cement “septic tank” rings. Each stack is 1.5 – 2 meters high. The biochar and all of the sand and gravel need to be replaced every year.

Basic rules for water filters

- It is necessary to “stir” the “mat” that forms on top of the sand every 2 months.
- Do not use the filter until the mat has reestablished (2 days).
- Do not allow the mat to be disturbed otherwise. (For example, pour dirty water in gently so that it does not tear the mat.)
- Use lots of crushed biochar. You do NOT want big pieces.
- Change everything (sand, gravel, biochar) at least once a year. After changing, wait until a new mat has formed before using.



Got questions? Please ask.

Thank you for your attention.
See you next time.

For special questions, please email us at
info@warmheartonline.org or visit us at
www.warmheartworldwide.org.