



World Food Programme

STEP BY STEP GUIDE: MAKE WATER HYACINTH CHARCOAL

World Food Programme South Sudan

BEFORE START: GATHER THE TOOLS NEEDED

- ⇒ A bucket or bottle (for water)
- ⇒ Another bucket or sack (for soil)
- ⇒ Sacks (to carry the water hyacinth and to hold the carbonized hyacinth)
- ⇒ Racks or plastic sheets (to help with the drying processes)
- ⇒ Matches / Lighter
- ⇒ Bowl (to mix the charcoal and binder)
- ⇒ Drum with lid on top and 5 holes on the bottom
- ⇒ Shovel/spade (to help gather soil, help seal, help remove the carbonized hyacinth, etc.)
- ⇒ Press tools
- ⇒ 3 medium rocks (to hold the kiln during carbonizing)
- ⇒ Large wooden stick (to help create airway)
- ⇒ Mosquito net (for sieving the soil for binder)
- ⇒ Plates/trays/carboard – something on which to place the briquettes as soon as done

STEP 1: COLLECT WATER HYACINTH

Pick the water hyacinth, dry or still green, including the stems and leaves. Remove the roots. At least three full 50kg sacks of wet water hyacinth needed for 1 carbonization process (will produce about 30 briquettes).



STEP 2: DRY THE WATER HYACINTH

Time: 2-3 days in dry season, 2 weeks rainy season

Once they're completely dry, no longer green and almost crunchy/break easily, they are ready to be carbonized.



STEP 3: PREPARE TOOLS FOR CARBONIZATION

- To carbonize the water hyacinth, you will need a kiln or drum. A 55-gallon metal oil barrel can be used.
- Easy-to-make cuts need to be made to the drum: several holes at the bottom (about 5) to allow for air to go through and which will each be lit to start the fire, and a large hole at the top for filling the kiln. This large hole will need a metal cover (sheet metal) for when it's time to seal the drum to keep oxygen from entering to allow the water hyacinth to carbonize.
- If the drum is being used for the first time, burn away the oil residue first before starting the carbonization.



STEP 4: CARBONIZATION PROCESS

- Fill the holes at bottom of kiln with material that is easy to ignite (e.g. cardboard, dried grass, hyacinth, etc. not plastic), and fill the drum with the dried water hyacinth.

A large stick can be used to create a gap in the center. This will create an airway shaft for the fire to burn better.



- Place the kiln on top of three stones to aid in lighting a fire underneath and allowing for air to flow. Remember the bottom is the side with the holes that are stuffed with easy-to-ignite material. Remove the stick.



- Light the material at the bottom of the drum. Try to light all the holes so that the fire burns through evenly. Watch for smoke coming out the other end.

- This step will produce a lot of smoke. Wait for 5 minutes (by then the smoke will likely disappear).

- Next, seal the drum. Remove the rocks from the bottom and cover the top hole with the metal lid.



- Use soil to seal the bottom of the drum and the top, around the lid, to prevent oxygen from entering.

- Now, wait about 25 minutes before removing the seal and opening the lid.



- After 25 min, remove the soil from the lid and from around the bottom. Carefully, open the drum and you should find black, carbonized water hyacinth



STEP 5: Mix carbonized water hyacinth

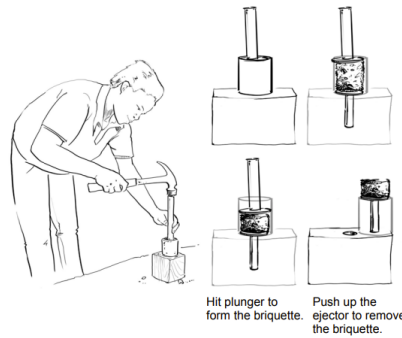
- Empty carbonized hyacinth into a bowl. Add water and soil. Mix together into a fine powder.
- A good ratio is 10:1 (e.g., 10 fistfuls of charcoal powder to one of soil) but even a little less soil would work. It is important to introduce only small amounts of soil as it slows the burning of the briquette.
- To clean the soil before mixing with carbonized water hyacinth, use a mosquito net over a sack or bucket to remove rocks and hard bits





STEP 6: Press briquettes

Fill the press (simple tool) with one handful of this charcoal mix and press tool against hard surface



Hit plunger to form the briquette. Push up the ejector to remove the briquette.



STEP 7: Dry briquettes

Dry in the sun for 2-4 days.



STEP 8: Cook with briquettes

Cook with the briquettes!



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