What does “Grain Hulling” mean?

If you want to grow rice, rye, or any of the older and heirloom varieties of wheat or barley you will need to find a way to remove the hull if you want to eat the grains. The hull is a papery shell around each individual seed on these crops that can be very difficult to remove. Today this process is done with large scale hullers and although many of our ancestors and many people still today hull grains by hand with a few basic tools it takes a lot of work and fair amount of skill and finesse. Because of this, these crops have not been an option for anyone who wants to grow a small amount for themselves or as a fun experiment in their community or school garden. This guide lays out how to make your own small scale grain huller for less than $30 so you can grow and process some of these delicious grains yourself.

This homescale grain huller is based off a modified hand crank grain grinder with the grinding plates covered with rubber so instead of pulverizing and grinding the grain into a flour it applies pressure and rubs the hull off the grain. The grinder we used is a very inexpensive grinder that can be easily purchased at major retailers including Amazon and Walmart.

Material List

- Manual Table Top Clamp Grain Grinder
- Two 6” Plum Pak Rubber Packing Sheets
- Original Gorilla Glue Adhesive
- Clamps
- Wood or Clay

Please note: these are our recommended supplies, but any rubber and adhesive alternatives may yield similar results.

Step One: Disassemble the Grinder

Locate handle and shaft anchor attaching shaft to body. Remove shaft anchor and handle so that only the grinder plate shaft and main body remain. Pull out grinder plate shaft from main body. Locate the two grinder plate section with the ridges.
Step Two: Creating the Rubber Rings

Print out the two provided templates (see Page 5). One template creates the rubber ring for the grinder plate on the main body; the other template creates the rubber ring for the grinder plate on the shaft.

Note that the template for the grinder plates on the main body has notches on the inner ring. These notches correspond to the grooves on the main body grinder plate. These grooves help force grains out as the handle is cranked. If the grooves are not aligned properly, rice will be forced under the rubber and the adhesive seal will be compromised. To further strengthen the bond and prevent this issue, apply additional adhesive to the grooves in the main body grinder plate.

Step Three: Applying the Adhesive

Clean and dry both grinder plate surfaces and rubber rings. If using Gorilla Glue, lightly moisten the rubber ring. Attach each rubber rings to their respective grinder plate. One rubber ring attaches to the main body grinder plate and one rubber ring attaches to the shaft grinder plate. Clamp and secure rubber rings to grinder plate surfaces as adhesive dries. Let dry at least 24 hours before use.

Clamping down the grinder plate on the shaft can be difficult due to the round shape of the shaft. You may need to create a clamping aid to keep constant and even pressure on the rubber ring as the adhesive dries. The clamping aid can be made out of any material, we created one out of wood. Find any piece of wood, scrap wood works great, that is at least 4” long by 4” wide. Create a hole in the center with a 1.5” diameter, wide enough for the shaft to fit through. If you are unable to work with wood, you could create a similar effect with a polymer clay. Create a shape with the same dimensions as above, making sure it is at least .5” thick. Cut out the hole with a 1.5” diameter from the middle and bake according to package directions.
How To Guide
Converting a Grain Grinder into a Rice Huller

Using the Grain Huller

Adjust the shaft anchor so that there is a small amount of space between the two grinder plates. The gap should be about the size of one of the grains that you are hulling. For rice, this is about 0.25 in. Fill the hopper with the grain. Crank the handle so rice begins to come out through the grinder plates. Adjust the shaft anchor based on performance. If rice is falling through without being hulled, make the gap smaller. If the rice is being crushed or pulverized, lessen the gap.

Crank the handle until all rice has run through the grinder. Run grains through the machine again, adjusting shaft anchor so that the gap is slightly smaller. Repeat until the majority of grains are dehulled. We found in our tests that it takes three complete hulls in order to clean 99% of the rice. Below is one cup of rice gone through the huller once, and a finished hulled cup of rice.

To use the clamping aid, thread the shaft through the hole and squeeze the aid against the rubber, making sure the rubber ring has not shifted off of the grinder plate. Clamp the aid to the base of the grinder plate to create a tight seal. Once dry, cut away any excess rubber and adhesive. Rubber should sit flush to the metal. Any overhang could result in a faulty seal.

Reassemble grain grinder. Place shaft back into the main body and secure with shaft anchor and handle. The grain grinder plates are meant to be flush in order to grind grains. To hull rice, however, the plates need to be further apart. In order to keep that same tension so the shaft anchor stays in place, you may need to use bolts attached on the inside of the screw. Your grain huller is ready to use!

Resources

The grain grinder we used:
Tall Cast Iron Mill Grinder

All other supplies are available at most Hardware stores.
Template for Tall Cast Iron Mill Grinder. Can be adapted for other grain grinders. To scale.