

Black Walnut Processing at the Kelsey Farm

John Kelsey 2020 Jan

1. In late October we pick up black walnuts using "Nut Wizards" and dump them in 5 gallon buckets. We don't use the wire bails that come with the Nut Wizards. They are too much trouble to keep track of. We usually have about 30 buckets lined up and move them row by row through the plantation. We try to do a thorough job. I don't know why.



2. When we get 16 buckets full, a cart hauls them to our homemade huller. The huller is direct drive from a tractor PTO. It doesn't take much power. We run the engine speed at 1500 rpm for wild nuts and 1000 for thin shelled cultivars - any faster will crack them. We speed up until we start racking nuts.

The huller started out as a hay conditioner - turned 90 degrees. The drum has weighted conveyor belting flaps. The bottom is bent ½ inch rebar with 5/8 inch gaps. The top was a 250 gallon fuel tank in its former life. The huller is essentially the same as the Hammonds huller except using belting rather than chains. I bought paint. It's somewhere. The huller can handle the buckets about as fast as I want to dump them. After 32 buckets we move everything because of the hulls piling up underneath. We change the tilt to make the retention time long enough to clean all the nuts. The plastic flap on the left stops it from slinging goo all over your pants. Since this picture, I have made the huller road legal, because others want to borrow it. Indecently, the hulled nuts are 1/3 the volume. 16 buckets picked up gives about 5 buckets hulled. Hearing protection is a must!



3. If you want to plant the nuts, we're finished. Just bury them until March. We have about 4000 black walnut trees planted for timber in various plots. We have identified a few (no more than 2%) "Select" trees for their demonstrated success in the plantation environment. Hugh Pence has a 100 acre plantation in Indiana and sells "Pence Select" seed - the same deal. Direct planting select seed is a good way to get started. If you are interested and at the starting stage, don't miss the black walnut grower information on www.thescalepit.com.

4. If you want to eat the nuts, there is more to do. The next step after hulling is to clean the nuts. We use a cement mixer for cleaning. If you don't clean the nuts, the end result after cracking is a filthy black mess. The cement mixer shown holds 1.5 buckets of nuts and a couple gallons of water. We run it for about 20 minutes per batch. This is a dirty job. After washing the nuts are dumped on a screen and sprayed off with a hose.



5. Spraying does not get all the crud rinsed off the nuts, so next we float the nuts. A plastic or rubber apron is a good investment. A few percent of the nuts are blanks and will float. The floaters are discarded. You have to do the floating soon after hulling, because once the nuts start to dry, good nuts will also float. The floating is mainly for the extra rinse. The blank nuts are not much of a problem.

6. The next step is to dry the nuts. Wet nuts will start molding right away. If they are moldy on the outside, they are soon moldy on the inside. You can spread them on the floor (no more than 2 deep. Three deep will mold). I built a dryer where a furnace fan blows up through an open barrel. It is in an unused greenhouse, so the air is hot and very dry. The dryer holds 75 gallons, the nuts are dry in a couple of weeks - no mold.

While drying the problem is mice, chipmunks, and squirrels. Notice the screen on top of the barrel. For floor drying, once the outside of the nuts are nice and dry, they can safely be stored in bulk (but not sealed up). The kernels will need more drying or they taste like raw beans. Put the nuts in some vermin-proof cage until Christmas, and then they are ready to be cracked or stored in a closed barrel.



7. Cracking: Traditionally, one waited until Christmas to crack black walnuts. I built a few generations of hand crackers. The last opus worked great! I could crack a bucket of dry nuts in an hour. Some design info is that 6000 lbs. will crack any black walnut. Get the jaws tight, then about .050" limited stroke will crack the nut and not wreck the kernels. The cracker needs to be rigid. If it is springy, it will go too far after the shell collapses and crush the kernels. By far the best direction to crack a walnut is pole-to-pole - the z-axis of the nut. Even the best hand cracker became more boring than my attention deficit could bear, so motorized! I made a 14 inch burr and run it with a metal lathe. It will go any speed and the big lathe doesn't know it is doing anything. It will crack a bucket of nuts easy in 1 minute



8. Now for the hardest part. I have no solution for separating kernels from shells. It takes 45 minutes to thoroughly hand separate a gallon of hand cracked nuts, and you get about 9 ounces of kernels. I have tried several industrial methods for separation - no luck. The best so far is screening for size. I used a 1/2 inch screen on top and a 1/4 inch screen on the bottom. I build wooden frames, and then later used my dad's old grain cleaner to do the shaking. What goes through a 1/4 inch screen is for the song birds to pick through. The middlings are the best - pieces of kernel and pieces of shell - nothing is stuck. It only needs hand separated.



This photo shows what the middlings are like. They are nice to work with. If you hadn't cleaned the nuts, this would look like a coal pile. The tops that won't go through the 1/2 inch screen are a problem - big pieces of shell - many with trapped kernel pieces. I close the gap on the cracker and run them through again. The first pass the gap is 3/4", then 1/2" then 1/4". Anything still trapped after that can go to for the song birds and woodpeckers. They have the time and interest to finish the job.

Recently I have made stainless drums for sizing and separating hazelnuts. I tried it on cracked black walnuts and the drum works much better than the shaking screens for sizing. Pieces of shell were always getting caught in the top shaking screen, but they do not get caught in the holes of the drum.



9. One last item: A major walnut storage menace (at least for us) is the Indian corn meal moth. When the weather warms, the female lays her eggs close to where she smells some goodies. The tiny tiny first stage larva can smell too and can penetrate about any container lid. They cannot get through the shell of solid un-cracked nuts, but they will infest the few nut that have shells slightly split open. Cracked nuts either before or after separation are their cornucopia. Our solution is to leave nuts in the shell as long as possible. Once cracked we store kernels in an old (working) refrigerator. It is the cold that protects us, not the door seal. When the new crop is ready, we throw the old out. I guess we could throw them out in the spring. I am not interested in messing with nuts in the summer.

Conclusion: In my opinion, you should never dig out trapped kernels. All the steps before separation are so easy. We have lots of nuts. Just start more nuts, and forget trapped kernels. By the time I have a pound of clean separated kernels, I have so much time invested that I'm making about \$3 an hour. Instead of me doing the hard work, I give the cracked un-separated middlings to friendly grey haired ladies, and then beg for cookies. The rest goes to the birds, and then the garden.