

HARVESTING, HUSKING, DRYING AND MARKETING MACADAMIA NUTS AND A FEW MORE THOUGHTS ABOUT GROWING MACADAMIAS

Jim Russell

HARVESTING

After all of the time and money spent to produce a quality crop of macadamia nuts you owe it to yourself and to the customers that will ultimately be the consumers of your macadamias to do a quality job of harvesting and preparing your macadamias for market. A sloppy job here can significantly reduce the value of your crop.

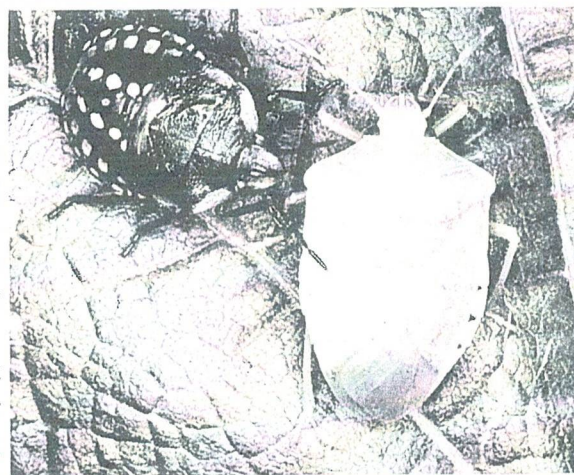
Early in September each year we set about getting our grove ready for the harvest season by removing, with a lawn rake, all of the leaves and other detritus that has accumulated under our trees since our last harvest season. That will make it much easier for us to locate our macadamia nuts when they fall from the trees. All of what we remove is processed in a chipper/shredder and then added to our compost pile for later adding to our soil.

When the macadamias start to fall, usually early to mid October and just a few at first, we set about harvesting, at least once a week, but normally twice a week. There are small, nondescript moths; the Naval Orange Worm, the Carob Moth, the Indian Meal Moth, etc. that will lay their eggs when the husk splits open. When that egg hatches, the worm will chew through the shell and spoil the kernel inside. Additionally, there are fruit-spotting -bugs that will cause harm to your macadamias, primarily the Southern Green Stink Bug. That bug has a long proboscis with which to drill through the husk and the shell and suck on the kernel within. That will leave a small round spot on the kernel. Unfortunately, bacteria will soon enter through that hole in the shell and ruin the kernel. Additionally, if you let them lie too long on the ground in their wet condition your kernels will start to discolor. So, it is important that you do not allow your macadamias to lie on the ground for very long or you may lose a portion of your crop.

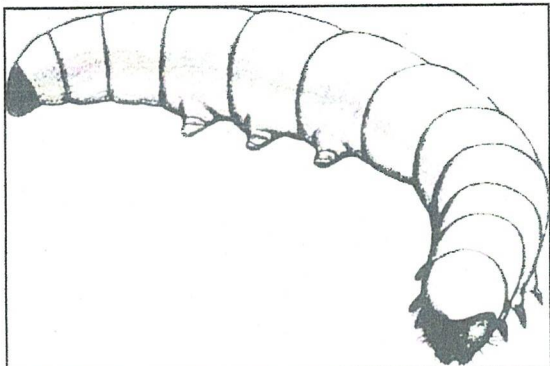
There is no real mystery to the actual harvesting, we just pick them up, place them in plastic buckets and take them to our "Nut House". That same day, all of the nuts that we harvested will be run through our husker and then will be placed in screen bottom trays to start the minimum two week drying process, at ambient (room) temperature. It is important that you DO NOT let your wet



Dee Udele using a high-tec lawn rake and a dust pan to harvest macadamia nuts. Notice that the ground under the tree is clear of leaves and other debris.

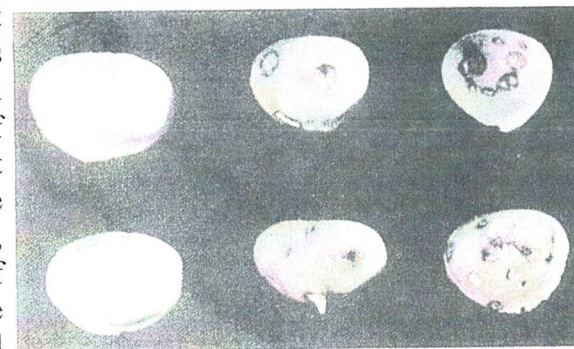


Mature Southern Green Stink Bug right, nymph left.



This is the worm that does the damage for the moths.

in-husk macadamias set in those plastic buckets or in any other confined space for any period of time. If you will not have time to take care of the nuts that day, you would be better off to let them lay in the grove until you will have the time to properly care for them.



Macadamia kernels damaged by the Southern Green Stink Bug.

If an emergency occurs after you have harvested and you really do not have the time to husk them right then, it is best to place the in-husk macadamias in your screen bottom trays, and as soon as possible take the husks off. It is imperative that you do not let them set in buckets, bags or other confining conditions when they are still wet.

The Beaumont variety is a special case since it is quite reluctant to drop its macadamias. The Beaumont nuts will hang on the tree after the husk splits open and continue to hang there while the shell splits open and a root starts to grow. Of course, once the shell splits open, the kernel is trash. So, for the Beaumont variety, it is suggested that you pick the nuts from the tree when the husk splits open and then proceed to husk and dry them just as for any other variety. The macadamia industry in South Africa, with about half of their crop of the Beaumont variety, is experimenting with chemical sprays that will cause the Beaumont tree to drop all of its nuts.

HUSKING & AIR DRYING

Heat and moisture are requirements of your trees to produce a quality crop, but together, they can be the ruin of your mature crop. When macadamias come off the tree they contain around 30 – 35% moisture. If you let them set in a confined place where the air cannot circulate (such as in a plastic bucket) they will build up heat (just like what occurs in a compost pile) and that will cause the macadamias to discolor and turn rancid. It is important that your just harvested macadamias have their husks removed and are then placed in screen bottom trays where the air can circulate around them, at ambient temperature, no added heat. That means that you should not let them set in full sun. Our drying trays are in our Nut House, and when we fill them with wet macadamias we then turn on a floor fan that forces a steady stream of air to flow over them. That helps to get the moisture out of them, to keep them from building up heat, and it also acts to deter any molds or mildew from forming on the outside of the shells.

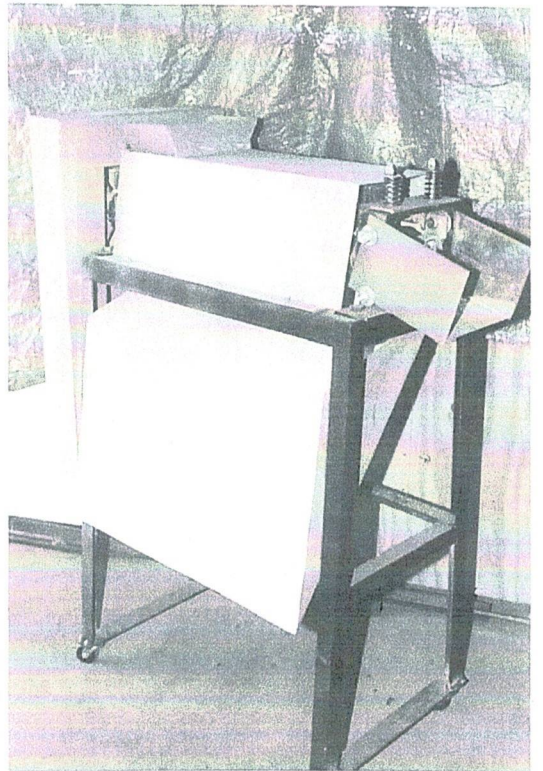
During the minimum two week period that your de-husked macadamias are in those screen bottom trays they will go from 30-35% moisture to around 5% moisture and an enzyme action will completely eliminate all reducing sugars. Your macadamia nuts will have a flavor similar to peas if the reducing sugars are not allowed to remove themselves, and additionally, if you attempt to roast them while the reducing sugars are still present the nuts will turn brown inside and out.

After their two-week stint in your drying trays, (they can stay longer but not too long) your macadamias are ready to be taken to a processor, such as the Gold Crown Macadamia Association, if that is your marketing method. Place them in burlap bags of around 50 pound each and deliver them. They still have around 5% moisture so you should not put them in plastic bags.

HEAT DRYING

If you are going to continue to process them, it is time to place them in a dryer with heat and circulating air to remove most of that remaining 5% moisture. The temperature in that dryer should be from 95° to 120° and will probably take from 1 to 4 days to get the remaining moisture down to around 1%, depending on the amount of macadamias in the dryer, the efficiency of the dryer, and the amount of moisture in the air. After 4 days, we take out a macadamia and crack it, looking for a nice sharp crack. If we get that then we sample the nut to see if it is what we are looking for. If so, it is time to take the macadamias out of the dryer. If not, give them another day to dry out.

When we remove the nuts from our dryers we place them in heavy plastic bags inside burlap bags and let them set until we are ready to take them to market. Once finished with the drying process, **if you let the nuts set open to the surrounding air they will reacquire moisture and in 2 to 3 weeks they will need to be dried all over again.**



Macadamia nut husker made by CMS BOD member Keith Chipman.

The husking and drying is an area where you can really ruin the flavor of your macadamias. If they set around wet and in a confined space for long they will develop a taste that is not likable. And, you only get one shot at selling nuts that are not tasty, and then you will have lost that customer for ever.

As we take the in-shell nuts out of the dryers we use a screen to separate out the larger, jumbo nuts, and those we sell in-shell, at a premium price. All of the remaining, smaller nuts are bagged and await their turn to be sold in-shell, or to be cracked, separated, sorted, bagged, labeled, and finally marketed.

MARKETING

We market all of our own macadamias, in the raw (un-cooked and un-salted) state, mostly through mail order and Certified Farmers Markets, but some go to a few specialty restaurants that want locally grown products and/or are raw food restaurants. There are people that want raw macadamia nuts and are willing to pay a small premium to get them. Those are the primary target for our nuts. We do not try to compete with imported macadamias since we cannot come close to matching their much lower costs of production.

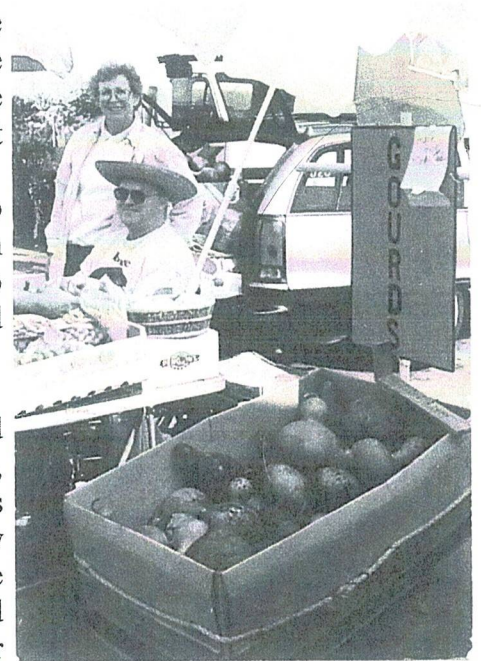
The in-shell nuts, both regular and jumbos we bag in one pound poly bags, with a label that has all of the required information; product identification, our name, address, phone number and e-mail address plus the net weight of the nuts. They should remain dry for at least 6 months in those bags, so they are ready for our enterprising customers to purchase, hand crack and enjoy. There are also a significant number of bird owners that will purchase the in-shell nuts for their feathered friends.

For the raw kernels, as the demand arises, we crack the nuts and then hand separate the kernels from the shells into three different categories, whole kernels, half-kernels and bits & pieces. These we bag in poly bags in various quantities, 1.5 ozs, 3.5 ozs, 7 ozs, and one pound bags, labeling each bag with all of the required information. Our primary method of marketing is through the Certified Farmers' Market Program which we have been doing for the past 26 years. To use that venue you first have to be certified by the County Agriculture Department. Contacting the county ag. dept. and they will send out an agent to go over your farm and verify what you are growing and then issue you a certificate listing everything that you have on your farm. This is done on an annual basis. Once you have been certified, you can contact the market manager for the markets that you want to attend and make the necessary arrangements. Once in a market you need to make a concerted effort to be there every time that the market is open so that you can build a clientele that can rely on you as their source of product.

For several years we attended 4 markets each week and we were fortunate to be able to share the marketing with another couple, Joe and Shirley Harvey. Joe and Shirley went to our markets one week and my wife, Barbara and I went the next week, each taking what was ripe at both farms each week. That kept our presence in the markets, but reduced the burden on each of us. We did that for almost 12 years, until Joe and Shirley passed. Over the years we have built a fair amount of repeat business both at the markets as well as via mail order and direct on-farm sales. We do have an e-mail address, and it is listed on all of our labeling, but we do not have a web site.

RODENT CONTROL

I am including a few photographs from around our macadamia grove. First are a few shots of our squirrel abatement program. We have been blessed with an extremely abundant squirrel crop this year and they will be devouring our nut crop soon if we are not successful with our efforts. First, we have placed several bait stations among our trees. We use blood thinner bait so that if a dog or cat were to consume one of the dead squirrels they would not be significantly affected. It is an ongoing project to keep those stations supplied since

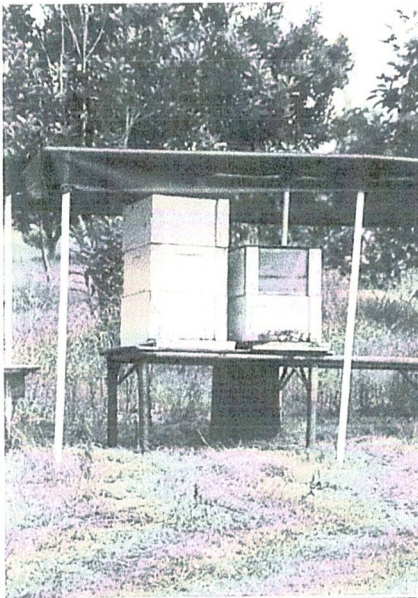


Jim & Barbara Russell at the Santa Monica Certified Farmers Market.

the squirrels take the bait and secrete it in their lairs for later consumption. Once they start eating it those squirrels will eat no more of our delicious nuts.

Additionally, we are employing several Duke traps. These are spring loaded steel traps that almost instantly dispatch their quarry. I have wired the trap to a cement block to prevent the coyotes from carrying it away with their prey. I don't mind the coyotes consuming the squirrel but I do mind donating my traps along with their dinner. You can purchase the Duke trap from the Sterling Fur Company in Pennsylvania (330) 939-3763 for around \$3.50 each or from the Duke Company, 508 Brame Ave, West Point, MS 39773 (662) - 494-6767. They are item number 110 in their catalog. They also have a thumb saver device to keep you from getting your thumb squashed as you are setting the trap. It costs \$6.50 but in my opinion it is definitely worth the money. By the way, those coyotes have been causing us a great deal of problems by their constant chewing on our irrigation system. We have been able to decrease the magnitude of that problem by placing two plastic watering bowls in our grove. They are filled with water when the system runs and the coyotes find it easier to drink from those bowls than to chew on our water pipes. Anyhow, we haven't had even one problem with them and our pipes since we employed those two bowls. They do move the bowls around so they must be returned to where the watering system will refill them. By the way, I attached six Duke traps to bricks, and three were gone the next day. Those darn coyotes. Then I got smart, read the catalog and ordered a dozen Coyote-wolf drags. The drags should be a whole lot easier to carry around than the cement blocks.

Second, we have been able to significantly increase the production of nuts since we have installed bees. We have had one super for the past two years, so last fall we increased it to two supers.



Two bee supers in our grove. Notice the shade screen to help keep them cool.

Those bees are doing a great job of pollinating our blossoms. Of course our trees are getting older and larger and that has added to a larger crop of nuts, but we believe the bees have added significantly to our nut crop. Anyhow, shortly we will be adding at least one more super of bees. By the way, if a bee comes buzzing around you, don't swat at it, just walk away. The bee will lose interest shortly and then you can return to what you were doing. Swatting is a great way to insure that you will get stung. also, the honey they produce is a great attraction at the Farmer's Markets where we sell the bulk of our farm's produce.

Anyhow, above is how we harvest, husk, dry and market our macadamia crop along with a few more thoughts about growing macadamias. We hope it helps you with your crop. Happy Growing to you! Jim Russell

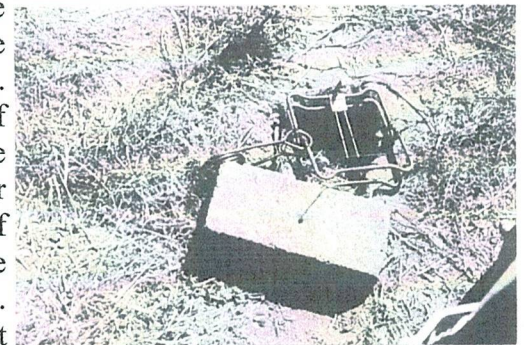
Sterling Fur Company, 11268 Frick Road, Sterling, OH 44276, 330-939-3763



A Squirrel bait station made from 4" PVC. That's my buddy Scout. He kept me company on my excursions in the grove



Squirrels have been here eating our delicious macadamia nuts.



A Duke squirrel trap wired to a brick in place over a squirrel hole.