

Popcorn season: Summers bounty in winter

by [Terra Brockman](#) in the [March 5, 2014](#) issue



FOR POPPING: Kernels from cobs shelled for popcorn are set out to dry in a mesh container that shields them from animals.

Before dusk five deer gingerly high-step their way single file uphill through the snowy woods, stopping to browse the few dry leaves still clinging to weeds and multiflora rosebushes. They blend in with the brush and are periodically obscured entirely by the snow that's whipping in updrafts and downsweeps.

My family and I are browsing too, although in greater variety, quantity, and comfort than the deer. Tonight I enjoyed a hearty dinner of roasted beets, carrots, potatoes, parsley root, turnips, and burdock. Plenty more roots are in the cellar, and my refrigerators and freezers are packed full of the colors and flavors of summer. In the stand-up freezer are jugs of my neighbor's apple cider and my sister's apple-pear cider and apple-pear-aronia cider. In the chest freezer are Ziploc bags full of "for-us" seconds from my brother's vegetable fields, everything from tomatoes to edamame to Anaheim peppers. And in yet another freezer are packages of my sister's chickens, another sister's pork, and beef from my dad—all from animals that are fed a varied diet, including lots of flawed but still nutritious produce from the fields. Finally, in the cabinets and on the counters are jars of dried herbs, dry beans, and my favorite winter snack, popcorn.

There's nothing quite so heartwarming and mouthwatering as the sound and smell of popcorn on the stove on a cold winter's night. The dads in most of the other families I knew growing up presided over meat on the grill. My dad presided over

popcorn on the stove, and I've loved and been fascinated by the process of popping popcorn ever since he first let me stand on a chair and watch.

Dad would get out a heavy pan, a pan that grew larger as our family did, until we maxed out at six (kids and quarts). He'd heat the pan, add vegetable oil, wait until it was hot, add three kernels, and when the first one popped he'd add more kernels—enough to cover the bottom of the pan in a single layer. After a pregnant pause, kernels would start popping in ones, then twos, then rapid-fire like muffled fireworks, releasing sweetly aromatic steam from the lid he kept slightly askew to keep the popped kernels crisp. He'd wait a few seconds to make sure that the last kernel had popped and then dump them all into a bowl.

But even the rosy memories of childhood are eclipsed by the reality of the popcorn my brother grows now, our current favorite variety being the flavorful Robust 997 from Johnny's Selected Seeds. The kernels are deep yellow, hard and glossy, and they pop into large creamy clouds of fresh, pure popcorn flavor.

How does this whole popping process work? According to certain American Indian tribes (some of whom developed popcorn more than 5,000 years ago) quiet, contented spirits live inside each kernel. When their homes are heated, the spirits become angry, shaking the kernels more and more vigorously. When the heat finally becomes unbearable, the spirits burst out of their homes and into the air in a disgruntled puff of steam.

The folklore is actually not far from the physics, if you consider water a spirit. The popcorn kernel is made up primarily of starch, and within that starch is a small but crucial bit of water. This is why, after we harvest the popcorn out of the field, we shell it and let the kernels dry outside in special containers open to the sun and breezes, but protected from mice, birds, and other animals that like popcorn as much as we do. We let the kernels dry until the moisture gets down to the ideal popping level, between 13 and 14 percent. We test the moisture level by popping a batch: if at least 80 percent of the kernels pop, it's ready to go. If the kernels are too wet or too dry, instead of the big fluffy pop you get a sad cracked kernel revealing a dense bit of starch inside.

What makes popcorn pop properly is the precise balance of moisture and oil within the starch encased in the very hard seed coat, or hull. Unlike the relatively soft hulls of corn for cornmeal or polenta corn, the popcorn hull is extremely strong and will

stay intact at very high temperatures and pressures. Scientists have measured the breaking point of a typical popcorn kernel at around 135 pounds per square inch, about five times more pressure than is in your car tires—which explains why kernels will jump two or three feet in the air if you remove the lid before they're all popped. Just before it explodes, the temperature inside the kernel is between 350° and 400° F, the temperature of your oven when you bake a cake.

What happens when you put popcorn into a hot pan is that the water and oils inside the kernel get up to that high temperature inside the kernel's tough hull, creating very hot, pressurized steam. If you've ever used a pressure cooker, you know how powerful pressurized steam can be, and you can imagine how strong the kernel's hull must be to withstand that pressure.

The superheated and pressurized steam causes the starch in the kernel to undergo a chemical transformation called gelatinization. The gelatinized starch becomes soft and pliable, and at the moment when the strong hull finally reaches its breaking point, there is a sudden drop in pressure that causes an equally sudden expansion of the steam inside the gelatinized starch, resulting in an air-filled foam. Within milliseconds that foam cools, and the starch and protein set into the familiar form and delicious taste of popped popcorn.

For the last 30 years or more popcorn has been bred not for its taste but for its popping volume. Some even say the natural taste was intentionally bred out because it conflicted with the artificial butter and other flavors added to movie house and microwave popcorn—flavorings that have been implicated in various health problems. These are just a couple more reasons to get pure and simple popcorn from a local farmer or to consider growing some of your own this coming season.

And the next time you enjoy fluffy popcorn kernels, consider the thousands of generations of Native Americans who bred it from its wild grass precursor, teosinte, and popped it over their campfires, perhaps as they watched deer pass by in the snowy forest.