

TIPS FROM THE TRADITIONAL COOK

A Corn and Cornmeal Primer: Nixtamalization and More—A Must Read!

Posted on [May 4, 2017](#) by [Maria Atwood, CNHP](#)



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One of the more complex questions for those of us who use corn and cornmeal, or who want to learn how to use them, is the process called nixtamalization (*niks-tamal-ization*). According to some, there's something wrong with using corn that hasn't been nixtamalized. However, learning the nitty-gritty of what it all means can be a daunting

process. *Fear no more (smile)—the answers are all here!*

In a recent Q&A via an email from a new member of the [Weston A. Price Foundation](#) (and apparent novice traditional cook), I was challenged to answer numerous questions about the nixtamalization process, and also supply sources for quality corn and cornmeal, and even provide starter recipes! Fortunately, I have this wonderful forum (*my blog posts*), so I decided to research and write about the mysteries of corn and cornmeal and then make my research available to others.

In this case I had two reasons to learn more: **1)** I recalled that my American Indian (Paiute) grandmother used to make a delicious blue cornmeal mush, which she called “**chaquegue**” (*recipe below*), but I never knew enough about this dish aside from the fact that it’s wonderful with cream and butter (*yum*), and I would like to enjoy it again; and **2)** I truly was not up to snuff on the whole corn and cornmeal questions I was asked, and therefore getting educated was imperative!

Hopefully, my research will provide the novice traditional cook and others an easy-to-understand article on nixtamalization, and more importantly, the secret of preparing this ancient grain so its nutrition is maximized.

First, a little history: “When Christopher Columbus brought corn back from the New World, it became a staple food in rural communities throughout Europe over the next couple of centuries. Unfortunately, he did not bring back the technique of nixtamalization. Therefore, many people dependent on corn in those rural European communities developed symptoms including peeling, scaly skin that was painful when exposed to sunlight (according to one theory, this gave rise to the legend of sun-averse vampires), hair loss, and dementia. The mysterious disease was given the name pellagra, from the Italian for ‘sour skin,’ but it wasn’t until the 20th century that science figured out that the disease wasn’t caused by a poison in corn but rather a deficiency in diet.

3

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“Corn is naturally abundant in niacin (aka vitamin B3), which is an essential part of the human diet. However, the niacin in corn is chemically bound to other molecules, so we humans cannot properly absorb it. If you try to subsist on a diet based around nothing but corn prepared without alkaline treatment, you will develop niacin deficiency—which, it turns out, is pellagra.”

—Excerpt from “[Transforming Corn: The Story of Nixtamalization](#)” by Paul Adams, [CooksScience.com](#)



According to Wikipedia, “[Nixtamalization](#) typically

refers to a process for the preparation of maize (corn), or other grain, in which the corn is soaked and cooked in an alkaline solution, usually limewater, washed, and then hulled. This process, originating in Mexico, is famously known to remove up to 97–100% of aflatoxins from mycotoxin from contaminated corn. The term can also refer to the removal via an alkali process of the [pericarp](#) from other grains such as [sorghum](#).”

Now let’s return to our excerpt from “Transforming Corn” by Paul Adams. On the process of nixtamalization, he writes: “The dry corn is brought to a near boil and then left to soak overnight in hot water with an added dose of *cal*—calcium hydroxide, also known as slaked lime or pickling lime. No relation whatsoever to the green citrus fruit, most

3
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slaked lime is produced by heating limestone, which is predominantly calcium carbonate (CaCO_3), in an industrial oven, a process called calcination. This breaks the CaCO_3 into carbon dioxide and calcium oxide. Adding water to the calcium oxide—‘slaking’ it—creates calcium hydroxide. Seashells, another source of calcium carbonate, can also be calcinated.

“In the morning, the chef drains and rinses the nixtamalized corn (nixtamalized corn is called *nixtamal*), rubbing off some (but not all) of the loosened outer layer of the kernels.

“The wet nixtamal is then milled between a pair of rotating grindstones: corn kernels go in, with a thin stream of water added, depending on the day’s humidity, and a silky, slightly elastic [masa](#) dough squiggles out the other end. After a knead to make sure the dough doesn’t have any overly dry or moist patches, it’s fed into a custom-built machine that flattens it into sheets, stamps out circles, feeds them through a series of heated iron conveyor belts, and emits a river of supple, fragrant finished tortillas.”

3
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—“[Transforming Corn: The Story of Nixtamalization](#)”

There are many otherwise unavailable nutrients locked in corn. [Alkali cooking frees these nutrients up](#) so they can offer the following benefits:

- Imparts deeper flavor
- Takes the hull off the corn
- Softens the corn kernels so they’re more easily ground
- Increases nutritional value
- Allows dough formation
- Enhances quality of corn protein by altering protein content in a way that makes it more complete
- Makes the niacin in corn more absorbable
- Enriches corn with vital minerals such as calcium, zinc, iron, and magnesium
- Significantly reduces molds that commonly infect corn

Personal note: You'll find a recipe for making limewater on page 454 of [Nourishing Traditions](#), as well as photos depicting the exact process at the [Nourishing Cook](#). Additionally, the [Cook's Science article](#) that I excerpt at length above provides detailed photographs of how to soak the corn kernels and then grind them up to a meal in your food processor (assuming you're not making enough for large-scale commercial use).

Let's Now Discuss Sources, Corn Varieties, and Recipes



3
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Exploring sources: This was indeed a challenge as I'm always looking for unique companies that meet my criteria: small businesses that supply superior, non-GMO, whole grain products to the consumer while trying to make it up that steep ladder of success! Very time consuming—but guess what? **I found one in particular, Anson Mills.** As you'll see in the excerpt below, their story is of special interest. (I've also provided a list of other resources as approved in the [Weston A. Price Shopping Guide](#).)

“The research began with corn. In 1995, Glenn explored rural back roads looking for the famous white Carolina mill corn that was revered in Antebellum plantation inventories and recipes for its high mineral and floral characteristics and its creamy mouthfeel. He found this corn in a bootlegger's field near Dillon, South Carolina in 1997, and planted and harvested his own first crop of 30 acres in 1998. Known as Carolina Gourdseed White,

the single-family hand-select dated back to the late 1600s.

“Glenn passed the Gourdseed grits around to chefs in Charleston and Atlanta, and they all went crazy.

“The discovery of Carolina Gourdseed White, and of other nearly extinct varieties of Southern mill corn, fueled Glenn’s efforts to preserve nutrition and flavor in heirloom corn. But he knew the corn would have to be milled as carefully as it was grown.”

—[AnsonMills.com, Biography of Glenn Roberts](#)

I invite you to go take a look at other cornmeal varieties below:

- [Antebellum Coarse White Cornmeal](#)
- [Antebellum Coarse Yellow Cornmeal](#)
- [Antebellum Fine White Cornmeal](#)
- [Antebellum Fine Yellow Cornmeal](#)
- [Native Fine Blue Cornmeal](#)

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Finally, here are more resources you may want to check out:

- [Country Life Natural Foods](#)
- [Natural Way Mills](#)
- [Bulk Foods & More](#)
- [Arrowhead Mills](#)
- [Heartland Mill](#)
- [The Urban Homemaker](#)
- [Sun Organic](#)

Let me also explain why I was at first concerned about cornmeal that hasn't been nixtamalized—or in other words, cornmeal that's

just ground whole and then packaged. After talking to an expert miller, I learned that unless corn is the only grain we eat, concerns over the niacin being locked in are no longer relevant. That's because we're no doubt getting enough [niacin from other food sources](#), including tuna, turkey, salmon, beef, and more.

Actual cornmeal cannot be nixtamalized as it will just turn into slurry. If it's an option for you, maybe go in with a group and order a large sack of corn, then split it up and process it for yourself at home.

And now, here are some recipes. Enjoy!

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Blue Corn Porridge ("Chaquegue")

—Adapted from [CookingPost.com](#). *This recipe is simply to die for!* And you may easily cut in half for smaller portions.

Ingredients

3½ cups water

1¼ cups blue cornmeal

1 teaspoon salt

Optional: raw or pasteurized cream, raw honey, and raw butter

Instructions

1. Bring water to boil. Mix cornmeal and salt. Introduce cornmeal to boiling water and mix well. Continue to beat to prevent lumping, stirring slowly for about 5 minutes or until smooth and thick.
2. Add raw or pasteurized cream (but *not ultra-pasteurized cream*), raw honey, and raw butter to taste.

Blackberry Cornmeal Cobbler

—Adapted from [Bow & Arrow](#): “This dessert is made from whole grains and has no added fat or refined sugars—and yet remains deliciously addictive! Plus, it takes only five minutes to prepare (plus baking time). For a variation, substitute blueberries, raspberries, or strawberries for the blackberries.” Serves 4.

Ingredients

⅓ cup white cornmeal

⅓ cup whole wheat pastry flour

1½ teaspoons baking powder

⅛ teaspoon sea salt

⅔ cup almond milk, unsweetened (*or raw, whole milk*)

⅓ cup pure maple syrup

2 teaspoons vanilla

2 cups fresh blackberries or 1 (10 oz.) bag frozen blackberries

Coconut oil spray

Instructions

1. Preheat oven to 400°F. Spray 8-inch pie pan with coconut oil and set aside.
2. In a medium bowl, whisk together cornmeal, flour, baking powder, and salt. Add almond milk, maple syrup, and vanilla. Whisk again until just thoroughly combined.
3. Pour mixture into lightly oiled pan. Evenly top with blackberries.
4. Bake 45 minutes, or until nicely golden-brown. Cool for five minutes before serving.

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Cornmeal Crusted Onion Rings



—Adapted from [Bow & Arrow](#): “These whole grain, gluten-free onion rings are so tasty they’ll make you forget about the unhealthy kind!”

Ingredients

For the coating:

¼ cup ground flax (flaxmeal)

6 tablespoons water

½ cup white cornmeal

1 teaspoon apple cider vinegar

½ teaspoon sea salt

½ cup unsweetened, plain almond milk, cold (*or raw whole milk*)

Freshly ground black pepper to taste

For the onion rings:

½ cup yellow cornmeal

1 medium onion, peeled and sliced into ¼-inch rings

Olive or coconut oil spray

Instructions

1. Preheat oven to 400°F. Spray large baking sheet with oil and set aside.
2. In a medium bowl, stir together all of the coating ingredients. Set aside. Place yellow cornmeal in a separate bowl nearby.

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3. Now it's assembly line time! Start by dunking each onion ring into the liquid, then toss with cornmeal. Use a separate hand for each task to avoid getting your "dry" hand all gooped up. Place the coated onion ring on the oiled baking sheet. Continue with the rest of the onion slices until they're all coated, placing them on the baking sheet without touching each other.
4. Spray the tops evenly with oil spray and bake for ten minutes. Remove, flip over gently, and spray again. Bake another ten minutes, or until they're browned and crisp. Enjoy immediately.

An afterthought from the Traditional Cook...

Ode to Maize

America, from a grain
of maize you grew
to crown
with spacious lands
the ocean foam.
A grain of maize was your geography.
From the grain
a green lance rose,
was covered with gold,
to grace the heights
of Peru with its yellow tassels. But, poet, let
history rest in its shroud;
praise with your lyre
the grain in its granaries:
sing to the simple maize in the kitchen.
First, a fine beard
fluttered in the field
above the tender teeth
of the young ear.
Then the husks parted
and fruitfulness burst its veils
of pale papyrus
that grains of laughter
might fall upon the earth.

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To the stone,
in your journey,
you returned.
Not to the terrible stone,
the bloody
triangle of Mexican death,
but to the grinding stone,
sacred
stone of your kitchens.
There, milk and matter,
strength-giving, nutritious
cornmeal pulp,
you were worked and patted
by the wondrous hands of dark-skinned women.

Wherever you fall, maize,
whether into the
splendid pot of partridge, or among
country beans, you light up
the meal and lend it
your virginal flavor.

Oh, to bite into
the steaming ear beside the sea
of distant song and deepest waltz.
To boil you
as your aroma
spreads through
blue sierras.

But is there
no end
to your treasure?

In chalky, barren lands
bordered
by the sea, along
the rocky Chilean coast,

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at times
only your radiance
reaches the empty
table of the miner.

Your light, your cornmeal, your hope
pervades America's solitudes,
and to hunger
your lances
are enemy legions.

Within your husks,
like gentle kernels,
our sober provincial
children's hearts were nurtured,
until life began
to shuck us from the ear.

—Pablo Neruda

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AUTHOR'S NOTE

To choose your organically grown and fresh ingredients wisely, use the following criteria:

- chemical- and hormone-free meat
- wild-caught fish
- pasture-raised, organic eggs
- whole, unrefined grains
- virgin, unrefined, first-press organic oils
- whole-food, unrefined sweeteners
- pure, clean, spring water
- sea salt
- raw and/or cultured milk and cream products

Note from Maria: I am a Certified Natural Health Professional, CNHP, not a medical doctor. I do not diagnose, prescribe for, treat, or claim to prevent, mitigate, or cure any human diseases. Please see your medical doctor prior to following any recommendations I make in my blogs or on my website.

Images from iStock/[ChamilleWhite](#) (main image), [ALLEKO](#) (corn bread), [bonchan](#) (blue corn), [axz66](#) (onion rings).

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Maria Atwood is a semiretired Certified Natural Health Professional and Weston A. Price Chapter Leader in Colorado Springs, CO. Visit her website at TraditionalCook.com. Also check out Maria's [Cook Your Way to Wellness](#) DVD (also available as an e-learning course) and be sure to follow her [Tips from the Traditional Cook](#) blog.

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One thought on “A Corn and Cornmeal Primer: Nixtamalization and More—A Must Read!”



Marianne Escobedo says:

Blue corn mush, as prepared by many Navajo and Hopi people, is blue corn meal added to juniper ash water. The juniper ash is mixed with water, allowed to settle, and the less cloudy water on the top is mixed into the blue corn meal which is poured into boiling water and then stirred. It has a great, rich flavor. This might have been how your family prepared it, but the nixtamalization process allows for deeper color blue, and higher calcium levels. Good eating!

December 25, 2018 at 11:14 pm

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