



Bread Baking Workshop

March 4th, 2020

Building Strong and Vibrant New York Communities

Cornell Cooperative Extension is an employer and educator recognized for valuing AA/EEO, Protected Veterans, and Individuals with Disabilities and provides equal program and employment opportunities.

Sourdough Breads

Sourdough bread can safely be made at home, following best practices to cultivate a healthy and viable sourdough starter. Maintaining a sourdough starter involves managing an ecosystem of microscopic yeast and bacteria. The key to ensuring a healthy sourdough starter is controlling the factors that influence microbial survival and growth.

In a healthy sourdough starter, yeast and lactobacilli thrive in a harmonious symbiotic relationship. Each has a preferred carbohydrate fuel from grain. The yeast uses these carbohydrates to produce ethanol and carbon dioxide. Ethanol is further converted by the bacteria, which produces lactic acid. Bubbles of carbon dioxide become trapped in the stretchy dough, making it rise. The acidity created by the lactobacilli is good for the yeast but inhospitable to other organisms, acting as a natural preservative. A sourdough starter is able to be kept at room temperature (if fed properly) and the acidity of the bread acts as a preservative even after baking as well.

A benefit from maintaining a sourdough ecosystem is a ready leavening that will yield bread and baked goods with better flavor, texture, and nutrient profiles. The fermentation process transforms the initial grain, developing more readily digestible protein content, decreasing starch content, improving some mineral and vitamin availability, and often increasing overall palatability. During the fermentations process, many of the simple sugars in the grain are eaten up as fuel, making it easier on blood sugar levels. The longer resting/rising time necessary to raise sourdough breads allows for the breakdown of the proteins, like gluten, into amino acids, making it easier to digest. This gluten breakdown is why **SOME** people who have a gluten sensitivity can tolerate sourdough breads. Also, the bacteria present in the sourdough help to activate phytase, an enzyme that breaks down phytic acid, an anti-nutrient found in all grains and seeds, making sourdough bread higher in nutrients by allowing vitamins and minerals to be more readily available to the body.

Best practices:

- Use safe food-handling procedures. Start with clean hands, equipment and surfaces, and use quality ingredients. Always keep the starter loosely covered.
- Flour is a raw agricultural product, it is not a ready-to-eat food and should always be cooked before consuming. Do not taste raw sourdough starter before baking. Instead, a bubbly appearance, tangy smell, batter-like consistency, expansion, and records of preparation steps should be used to determine when your starter is ready. The fermentation process will acidify the starter, which helps prevent pathogen growth and the baking step will kill any bacteria present.
- Wild yeast is naturally on the flour and in the air. Wild yeasts are inactive, but under suitable conditions will become activated in the presence of water. Yeast does not need to be added when making a sourdough starter. Wild yeast is found on the surface of grains, fruits, vegetable, and in the air and soil.
- Take care of your living starter. The fermenting microorganisms in sourdough starter need to be fed fresh flour and water regularly to survive and grow. Regular removal of some starter is an important step when feeding, to stabilize the volume of microorganisms and ensure nourishment for metabolic processes. Refrigeration can

be used to prolong time between feedings in an active starter, but is not needed if feeding regularly. Sourdough starter can also be dried for long-term storage.

Monitor Factors:

Time: Creating a starter or rehydrating a dried starter will take several days of regular feeding. It will bubble and rise, and develop a pleasantly sour smell when ready to use.

Temperature: The fermenting microorganisms are more viable at temperatures that feel comfortable for you, a warm room temperature (around 70°F). Fermentation will slow at colder temperatures, and occur too rapidly or even stop when too hot for your own comfort.

Moisture: Water combined with the flour will provide the environment needed to cultivate the wild yeast and bacteria. Keep starter loosely covered to discourage mold development.

Acidity: Beneficial lactic acid bacteria (LAB) will produce lactic acid, which will increase the acidity, dropping the pH safely below 4.6. This rapid acidification of the sourdough starter will help limit growth of harmful microorganism, including mold.

Nutrients: Regularly spaced feeding intervals are necessary. Removal of some starter with each new addition of flour and water helps with nutrient access for optimal growth.

Oxygen: Fermenting sourdough starters will produce carbon dioxide. The starter should be loosely covered in order to safely release the gas, but the culture does not require oxygen.

CSU Ext. <http://farmtotable.colostate.edu/prepare-ferment/sourdough.php#.Xkv-jyhKjIU>

Sourdough Starter

1/3 cup (50g) all-purpose flour

1/3 cup (50g) whole wheat flour

A little less than 1/2 cup (100g) water, room temp

Equipment: glass jar/dish, loose lid, plastic spatula, rubber band, kitchen scale (optional)

1. Mix flours and water well to combine with no clumps. Let rest in warm spot 24 hours.
2. When starting a feeding schedule, make sure to feed your starter with the same type of flour you intend to bake with.
3. Day 2: Mix 1/4 cup starter + 1/2 cup flour mix + 1/4 cup room temp water. Stir to combine completely. Cover and let rest 24 hours. Discard rest of previous starter.
4. Day 3: Mix the same feeding ratios. Stir to combine completely. Let rest 24 hours. Discard the rest of previous starter.
5. Day 4-6: Feed twice a day (every 12 hours). Mix the same feeding ratios. Stir. Cover. Let rest 12 hours. Discard the rest of previous starter.
6. Day 7+ until ready: Feed every 12 hours. Mix same feeding ratios. Stir. Cover. Let rest 12 hours. Discard the rest of previous starter. Keep watch for signs of peak activity.
7. If the starter begins to have any off-odors or mold growing on top, you will have to throw it out and start over.
8. If you think it is ready to leaven your bread, perform a “float test”. If a small chunk floats when placed in water, it is ready to use.

9. If you use part of the culture, feed the leftover culture. Let it sit 1 hour at room temperature, then refrigerate. If you do not use the culture, you should still feed it. If the culture is unrefrigerated, you must feed it once a day. If the culture is refrigerated, feed it once a week. If you neglect it for several weeks, the culture might die.
10. To reactivate your starter, feed it 12 hours before you plan to bake, making sure to reserve at least 1/4 cup of your starter in your refrigerator for future baking.

Sourdough Baguette

2 cups flour
1/2 cup water
1/2 tsp sea salt
1/2 cup sourdough starter (active)

1. Activate starter by feeding several hours before mixing the dough.
2. Combine all ingredients and mix well.
3. Sprinkle a couple tablespoons of flour on a work surface. Knead the dough slightly, taking time to knead gently. Avoid adding too much flour.
4. Form the dough into a ball and cut in half. Form each half into a long baguette. Place on a greased or parchment lined sheet pan.
5. Cover lightly with a damp towel and let rise 3-6 hours until doubled.
6. Preheat oven to 425°F and bake 15 minutes, or until golden brown.
7. Cool on a rack for at least 20 minutes.

www.culturesforhealth.com

Sourdough English Muffins

1/2 cup (100 g) sourdough starter (active)
1 Tbsp (20g) honey
1 cup (240g) milk
3 cups (360g) all-purpose flour
1 tsp (5g) fine sea salt
1/4 cup (40 g) cornmeal (for sprinkling)

1. 12 hours prior to mixing the dough, feed your sourdough starter by mixing 1/4 cup starter + 1/2 cup ap flour + a little less than 1/2 cup water.
2. The night before, cooking add all ingredients (except corn meal) to a large bowl and use your hands to mix until well combined. Turn the dough out onto a floured surface and knead the dough for 5 minutes. Place the dough back into the bowl, cover and let ferment on the counter at room temperature 10-14 hours. (Room temperature is 65-70°)
3. The next morning, turn the dough out onto a floured surface, flour the top of the dough and press it out with your fingertips until it is 1" thick.
4. Use a 3" biscuit cutter, or a regular mouth jar, to cut rounds and place them on a parchment lined baking sheet that's been sprinkled with cornmeal.
5. Sprinkle the tops with cornmeal, cover, and let rise for 1 hour at room temperature.
6. Preheat a non-stick skillet over low heat. Place 4 muffins into the skillet 2" apart, cover, and cook the first side 4 minutes. Turn muffins over, cover, and cook 4 minutes.

<https://littlespoonfarm.com>

Baker's Yeast Breads

Baker's yeast is a living organism that needs food and moisture to thrive. When combined with liquid and sugar, yeast "wakes" out of a dormant state, feeds on sugar and converts it to carbon dioxide through fermentation. Carbon dioxide is responsible for stretching and expanding the dough, which makes it rise. Yeast fermentation also provides the flavor and texture you expect in yeast-raised recipes. Yeast thrives in warm temperature, which is why warm liquid is added to dough. However, yeast will begin to die at 135°F or higher. A good rule of thumb: if it's too hot to touch, it's too hot for the yeast. There are two types of dry yeast available, Active Dry Yeast, which has a moderate rate of rising, and Instant Yeast, which has a faster rate of rising.

Kneading dough is a common step in bread baking, especially in baker's yeast recipes. You can knead dough with your hands or in a stand mixer fitted with a dough hook. Using your hands, the dough should be massaged and stretched with gentle motion. Kneading the dough serves a couple purposes. First, it incorporates air into the dough. Second, it also encourages proteins in the flour and moisture in the dough to link together, forming a strong gluten network which is essential for retaining the gas produced by the yeast. Gluten is what makes bread deliciously chewy.

Sandwich Bread

1 cup warm water
1/4 cup whole milk, lukewarm
1 packet active dry yeast (2 1/4 tsp)
2 Tbsp sugar
4 Tbsp unsalted butter, softened at room temp.
1 1/2 tsp salt
3 cups bread flour (can use all-purpose)

1. Stir the water, milk, yeast, and sugar together with your stand mixer fitted with a dough hook or by hand. Cover and allow to sit for 5 minutes.
2. Add the butter, salt, and 1 cup flour. Beat on low for 30 seconds, scrape down the sides of the bowl with a rubber spatula, then add another cup of flour. Beat on medium until relatively incorporated. Add the final cup of flour and beat on medium until the dough comes together and pulls away from the sides of the bowl, about 2 minutes.
3. Keep the dough in the mixer and beat for an additional 2 minutes or knead by hand on a lightly floured surface for 2 minutes.
4. Lightly grease a large bowl with olive oil or nonstick spray. Place the dough in the bowl, turning it to coat all sides in the oil. Cover the bowl and allow the dough to rise in a relatively warm environment for 1-2 hours or until double in size.
5. When the dough is ready, punch it down to release the air. Lightly flour a work surface, your hands, and a rolling pin. Roll the dough out into a large rectangle, about 8×15 inches. It does not have to be perfect— in fact, it will probably be rounded on the edges. That's ok! Roll it up into an 8 inch log and place in a greased 9 x 5 inch loaf pan.
6. Cover and allow to rise about 1 hour until it's about 1 inch above the top of the pan.
7. Preheat oven to 350°F. Place pan on lower rack.
8. Bake for 30-34 minutes or until golden brown. If you gently tap on the loaf, it should sound hollow. If the top is browning too quickly, loosely tent the pan with aluminum foil. Remove from the oven and allow bread to cool slightly before slicing and serving.

Soft Pretzel Recipe

1 1/2 cups warm water
1 packet active dry or instant yeast (2 1/4 tsp)
1 Tbsp brown sugar
1 tsp salt
1 Tbsp unsalted butter, melted and slightly cool
3 3/4 - 4 cups all-purpose flour
Egg wash: 1 egg beaten with 1 Tbsp milk
Coarse sea salt

Baking Soda Bath

1/2 cup baking soda
9 cups water

1. Whisk yeast into warm water. Allow to sit for 1 minute. Whisk in brown sugar, salt, and butter. Slowly add 3 cups flour, 1 cup at a time. Mix with a wooden spoon (or dough hook attached to stand mixer) until dough is thick. Add 3/4 cup more flour until the dough is no longer sticky. If it is still sticky, add 1/4 – 1/2 cup more, as needed. Poke the dough with your finger – if it bounces back, it is ready to knead.
2. Turn the dough out onto a floured surface. Knead the dough for 3 minutes and shape into a ball. Cover lightly with a towel and allow to rest for 10 minutes.
3. While waiting, preheat oven to 400°F. In a large saucepan, mix the baking soda and water and bring to a boil. Line 2 baking sheets with parchment paper or silicone baking mats. Set aside.
4. Place dough on a clean surface. Gently press out dough into a rectangle. With a sharp knife, pizza cutter, or dough scraper, cut dough into 1/3 cup sections. You should have 12 pieces of dough to make 12 pretzels.
5. Roll each dough piece into a 20-22 inch rope. Take the ends and draw them together so the dough forms a circle. Twist the ends, then bring them towards yourself and press them down into a pretzel shape.
6. Bring baking soda and 9 cups of water to a boil in a large pot. Drop 1-2 pretzels into the boiling water for 20-30 seconds. Any more than that and your pretzels will have a metallic taste. Using a slotted spatula, lift the pretzel out of the water and allow as much of the excess water to drip off. Place pretzel onto prepared baking sheet.
7. Apply egg wash. Sprinkle each with coarse sea salt. Repeat with remaining pretzels.
8. Bake for 12-15 minutes or until golden brown.
9. Serve warm with mustard or a nacho cheese dipping sauce.

Tip: To make pretzel rolls, use the same recipe, but allow the dough to rest longer, for about 1 hour. Form the 1/3 cup sections of dough into balls instead of pretzels and bake for 22-26 minutes or until deep golden brown.

Quick Soda Breads

Baking soda allows for the rise with no rest/rise time. The oven should be fully heated by the time the bread is ready to bake because the acid from the buttermilk starts reacting with the baking soda as soon as they mix, creating little air bubbles that need the heat of the oven to expand and make the bread rise.

Mo's Irish Soda Bread

- 4 cups whole grain white flour, such as Ultragrain
- Or** 2 cups whole wheat flour and 2 cups all-purpose flour
- 2 teaspoons baking powder
- 1 teaspoon baking soda
- 1 teaspoon salt
- 1/4 cup butter (4 tablespoons)
- 1 1/4 cups raisins or 1 1/4 cups currants
- 1 Tablespoon caraway seeds (optional)
- 1 3/4 cups low-fat buttermilk
- 1 Tablespoon honey

1. Preheat to 375°F. In a bowl, combine flour, baking powder, soda, and salt.
2. Cut in butter until it reaches a coarse meal consistency. Start with two knives, then finished with your hands.
3. Add raisins.
4. Combine liquids separately. Add liquids to dry ingredients.
5. Use your hands to mix the dough to keep it light and airy. Mix and knead gently right in the bowl until a soft dough forms and it is smooth (about 3 minutes).
6. Shape the dough into two balls and place them on a greased baking sheet. Flatten each to about 1 1/2" thick in the center and cut an X about 1/4" deep in the top of each loaf.
7. Bake for 35 minutes. Makes 2 loaves, or about 16-24 servings.

***Tip:** If you want plain soda bread you can leave out the raisins, caraway seeds, and honey.

Traditional Soda Bread

- 3 1/2 cups all-purpose flour
- 1/2 tsp fine sea salt
- 3/4 baking soda
- 1 1/2 cups buttermilk

1. Preheat oven to 450°F. In a large bowl, sift together the flour, salt and baking soda. Make a well in the center and add the milk. Use your hand to mix the dough until soft.
2. Turn the dough out onto a well-floured work surface. Knead the dough lightly for a few seconds, then pat the dough into a round about 1 1/2" thick. Place it on a buttered baking sheet and using a sharp knife, cut a deep cross in the center of the dough reaching out all the way to the sides.
3. Bake 15 minutes, then lower the oven to 400°F, and bake until the top is golden brown and the bottom sounds hollow when tapped, about 30 minutes. Serve warm with butter.

Nutrition Facts	
16-24 servings per container	
Serving size	
Amount per serving	
Calories	140
% Daily Value*	
Total Fat 3g	4%
Saturated Fat 1.5g	8%
Trans Fat 0g	
Cholesterol 5mg	2%
Sodium 270mg	12%
Total Carbohydrate 26g	9%
Dietary Fiber 3g	11%
Total Sugars 8g	
Includes 1g Added Sugars	2%
Protein 4g	
Vitamin D 0mcg	0%
Calcium 71mg	6%
Iron 1mg	6%
Potassium 205mg	4%

*The % Daily Value tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Whole Grains/Breads

Whole grains are an important source of fiber, vitamins, and minerals. They also contain phytonutrients, compounds occurring naturally in plants that help promote health and prevent cancer. Whole grain foods are made from the entire grain seed, called the kernel. The kernel has three components: bran, germ, and endosperm. The bran is the fiber-rich outer shell, the endosperm is the starchy middle layer, and the germ is the nutrient-packed inner layer. Refined grains have gone through a milling process in which most of the bran and germ is removed, resulting in the loss of fiber, vitamins, and minerals.

Healthy Homemade Hamburger Buns

- 2 tablespoons active dry yeast
- 1 cup plus 2 tablespoons warm water (110° to 115°)
- 1/4 cup olive or vegetable oil
- 2 Tbsp. sugar
- 1 large egg
- 1 teaspoon salt
- 3-3 1/2 cups Ultra-grain or white whole grain flour

1. In a large bowl, dissolve yeast in warm water. Add oil and sugar; let stand for 5 minutes. Add the egg, salt and enough flour to form a soft dough 3 to 3.5 cups. Note: This can be done in bowl of stand-up mixer.
2. Turn onto a floured surface; knead until smooth and elastic, about 3-5 minutes. (Note: can be done by dough hook attachment of stand-up mixer). Do not let rise.
3. Divide into 12 pieces; shape each into a ball. Place 3 in. apart on greased baking sheets and press down slightly to flatten the ball. Note: Pieces can also be shaped into hot dog buns. For larger sandwiches divide into 8 pieces before making balls or divide into 24 pieces to make slider rolls.
4. Cover and let rest for 10 minutes. Bake at 425° for 8-12 minutes or until golden brown. Remove from pans to wire racks to cool. Yield: 1 dozen.

Nutrition Facts	
12 servings per container	
Serving size	1 Bun
Amount per serving	
Calories	200
% Daily Value*	
Total Fat 13g	17%
Saturated Fat 1g	5%
Trans Fat 0g	
Cholesterol 10mg	3%
Sodium 135mg	6%
Total Carbohydrate 19g	7%
Dietary Fiber 3g	11%
Total Sugars 2g	
Includes 2g Added Sugars	4%
Protein 4g	
Vitamin D 0mcg	0%
Calcium 10mg	0%
Iron 1mg	6%
Potassium 101mg	2%
<small>*The % Daily Value tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.</small>	

Sprouted Grain Flour & Sprouted Seeds

Sprouted grains have more nutrients than whole grains and may be easier to digest. Sprouted grains are whole-grain seeds that have just begun to grow and aren't quite plants yet. Inside the bran), the germ relies on the seed's endosperm — the starchy food supply — to fuel its growth. The germinating process breaks down some of the starch, which makes the percentage of nutrients higher. It also breaks down phytate, a form of phytic acid that normally decreases absorption of vitamins and minerals in the body, so sprouted grains have more available nutrients than mature grains. Also due to the breakdown of some starch, sprouted grains may have less starch and be easier to digest than regular grains.

Sprouted seeds added to bread make it taste nutty and adds a whole new level of nutrition to your baked goods.

Pumpkin Seed Alfalfa Sprout Bread

- 1 package instant yeast
- 2 ½ cups bread flour
- 1 cup whole wheat flour
- 1 ¼ teaspoon salt
- 1/3 cup milk; soy, dairy or non-dairy will work
- 1 cup sprouts, alfalfa
- ½ cup pumpkin seeds
- 2 Tablespoons coconut oil
- 1 Tablespoon honey
- 1 ½ cups water

1. Preheat oven to 450°F.
2. Add yeast to very warm water and let sit for 5 minutes.
3. Add dry ingredients to a mixing bowl or food processor.
4. Add wet ingredients, nuts and alfalfa and combine.
5. Knead 10-15 minutes. Let rest 5 minutes. Then knead another 5-10 minutes.
6. Divide dough in half and place in 2 greased bowls.
7. Let rise in warm place for 2 to 4 hours or double in size.
8. Pour dough into 2 loaf pans or pour onto a hot baking stone as free form loaves.
9. Bake for 20-25 minutes or until done.

*** Tip:** To know when the bread is done, take the loaf out of the oven and turn it upside down, taking it out of the pan if you're making a sandwich loaf. Give the bottom of the loaf a firm thump! The bread will sound hollow when it's done.

Sourced from: Sue Petersen, CNS. www.SuePetersen.com

Nutrition Facts	
15 servings per container	
Serving size	1 slice (32g)
Amount per serving	
Calories	70
% Daily Value*	
Total Fat 2g	3%
Saturated Fat 1g	5%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 90mg	4%
Total Carbohydrate 11g	4%
Dietary Fiber 1g	4%
Total Sugars 1g	
Includes 0g Added Sugars	0%
Protein 3g	
Vitamin D 0mcg	0%
Calcium 7mg	0%
Iron 1mg	6%
Potassium 48mg	2%
<small>*The % Daily Value tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.</small>	

Beer Breads

Beer is, naturally, a rising agent. Beer and yeast bread are both made with grains that are fermented by yeast, which produces carbon dioxide, which makes bread rise and gives beer its foamy head, and alcohol, which almost entirely evaporates during the baking process. Beer bread can be made simply with flour, beer, and sugar. Some bottled beers, especially craft beers, may still have dormant, but live, yeast sediment at the bottom of the bottle. However, many mass-market beers have the live yeast filtered out. Without enough leavening from the beer, the bread can be dense and heavy unless an additional leavening agent, like baking soda or baking powder, is added. Self-raising flour may be used because it is a mixture of flour and leavening agent. When you add beer to your bread mix, the beer's yeast content reacts with the baking powder and starches in the flour, causing the dough to rise and start to leaven.

Flavor is also an important factor to consider when making beer bread. Bread needs to bake for a long time so the beer you choose, the hops, malts, alcohol, and flavor, is going to change. The malt in some craft beer can come in many flavors and knowing what malt you have and how it will react to long baking times can affect the end result. You also have to be careful if you choose a very hoppy beer because the baking process can make the hops become very bitter. You can fight this by adding some water, buttermilk, and honey to it to control and slow the hops. When considering flavor, a good rule of thumb is to start small and let the flavors expand in the oven.

Beer Bread

- 3 cups flour (sifted)
- 3 teaspoons baking powder (omit if using Self-Rising Flour)
- 1 teaspoon salt (omit if using Self-Rising Flour)
- 1/4 cup sugar
- 1 (12 ounce) can or bottle of beer
- 1/4 cup melted butter

1. Preheat oven to 375 degrees.
2. Mix dry ingredients and beer.
3. Pour into a greased loaf pan.
4. Pour melted butter over mixture.
5. Bake 1 hour, remove from pan and cool for at least 15 minutes.

This recipe makes a very hearty bread with a crunchy, buttery crust. If you prefer a softer crust (like a traditional bread) mix the butter into the batter instead of pouring it over the top.

Sifting flour for bread recipes is a must-do. Most people just scoop the 1 cup measure in the flour canister and level it off. That compacts the flour and will turn your bread into a "hard biscuit" as some have described. That's because they aren't sifting their flour! If you do not have a sifter, use a spoon to spoon the flour into the 1 cup measure. Try it once the "correct" way and you will see an amazing difference in the end product.

Source: <https://www.food.com/recipe/beer-bread-73440>