



Getting Started with Sourdough

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History

Ask most people about the origin of sourdough and you are likely to hear stories about the culinary exploits of mountain men and prospectors in North America during the 1800s. Men who lived off the land, ate what they could hunt, and supplemented their diet with bread made from a sourdough starter. These men depended on their starter and fiercely protected it; losing one's starter meant limiting one's diet. Because sourdough starter was so important to dietary variety and because it replenishes itself during use, starter must have surely been shared with those unfortunate individuals who lost theirs. Sourdough was so much a part of the Alaskan and Northwest Territory culture, that an experienced prospector in this region was called a "sourdough."

But the history of sourdough goes back further than the 1800s. Archaeological evidence in Egypt shows evidence of leavened breads being made 4000 years ago. Probably the first leaven bread was a flour-water mixture that was accidentally left out, fermented, and later cooked. Arguably the world changed to the better for all of us when early bakers discovered how to make naturally-leavened bread.

Leavening Agents

The term *leaven* means to lighten dough or cause it to rise. There three ways to leaven dough: physically, chemically, and biologically.

Physical leavening captures air in a dough while it is being mixed. Creaming butter or beating eggs until light and fluffy are two examples of physically leavening dough. Aerated or fluffed-up flour and sugar can also trap air in a dough mixture to physically leaven it.

Chemical leavening uses a chemical process which releases carbon dioxide that then dissolves into the dough to add bubbles of air. The two most common chemical leaven agents are baking soda and baking powder. Both work by an acid ingredient reacting with an alkaline ingredient. In the case of baking soda, which is an alkaline, the acid must come from the dough. Common naturally-acidic ingredients are buttermilk, sour cream, citrus juice, brown sugar, chocolate, or molasses. When baking soda mixes with acidic dough, it reacts and releases most of its gas immediately. Recipes incorporating baking soda should be baked as soon as possible after mixing because they start losing their leavening action as soon as the ingredients are combined.

Double-acting baking powders (most baking powders these days are double acting) contain three ingredients: a fast-acting acid, a slower-acting acid, and an alkaline. When the baking powder is mixed with a liquid, the fast-acting acid reacts immediately with the alkaline to start aerating the dough. The slow-acting acid lies dormant until heated and then it begins to release carbon dioxide. This one-two punch allows recipes incorporating baking powder, such as biscuits, to be made ahead of time and still have additional leavening power when heated.

Biological leavening agents are one-celled plants, known as yeasts, that release carbon dioxide through fermentation. The yeast may be commercial, domestic yeast or wild yeast. Commercial yeast or baker's yeast was introduced in the late 1800s and most bakers use commercial yeast in their products because the yeast is consistent and fast acting. Wild yeast, which has been around

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for thousands of years, varies from country to country. The wild species is less uniform, less predictable, and takes longer to achieve the same leavening result than when using commercial yeast.

Besides the uniformity difference, there are three other differences between baker's yeast and wild yeast. The first two differences relate to the growth environment. Wild yeast grows best in acidic dough and commercial yeast does better in neutral or slightly alkaline dough. Wild yeast also prefers a cooler temperature than commercial yeast. Because of their differing environmental needs, commercial yeast and wild yeast do not grow well together.

The third difference is that baker's yeast is a single organism but wild yeast is found with other organisms. Commercial baker's yeast consists of a single yeast species (*Saccharomyces cerevisiae*) and, although it has hundreds of strains and varieties, it is a highly uniform product that produces an equally uniform texture in bread. Wild yeast is not so pure. It typically contains two organisms: wild yeast (*Candida humilis*) and bacteria (primarily from the genus *Lactobacillus*). The yeast and bacteria are cultivated together in the sourdough starter. The yeast makes the bread rise and the bacteria produces lactic acid which contributes to the sour flavor and creates an acidic environment. The lactobacilli bacteria do not grow as fast as the yeast. In the two hours it takes commercial yeast to fully ferment, if any lactobacilli are present, the bacteria have little chance to get started. This is why a lengthy rise time is required to get the full sourdough flavor.

Creating a Starter

There are two ways to obtain sourdough starter, make it yourself or get it from someone else. If you know someone who bakes with sourdough, it's easy to get a small starter sample. There are also companies that will sell starter to you. But if you are an adventurous pioneer and the first in your circle of friends to bake with sourdough, don't despair. Creating a starter is easy; people have been creating starters for over four thousand years. Once you create your sourdough starter, people will come to you asking for samples of your starter.

The first step in creating a starter is to make an environment in which the yeast and bacteria will live and then capture them. Start by mixing two cups of flour with 1 ½ cups of warm water into a clean 2-quart plastic or glass bowl. Plastic or glass is necessary because sourdough starter is acidic and will likely interact with a metallic bowl. Vigorously stir the flour and water to incorporate air into the mixture; the yeast and bacteria flourish better in an aerated environment. Expose the mixture to the air, either inside your house or outside. I prefer to leave the bowl in my kitchen so I don't have to worry about backyard critters getting into it. Do not cover the bowl lest you exclude the yeast and the bacteria that you are seeking. Every twelve hours or so, stir the mixture vigorously to aerate it. After two or three days bubbles should appear on the surface, this indicates success. If the culture has a repulsive odor, discard it, wash the bowl in hot soapy water, and start over.

If you were successful, celebrate by feeding the new sourdough culture a cup of flour and sufficient water to maintain its consistency (it should resemble thick pancake dough). You may need to repeat this feeding for a day or so, at six to twelve hour intervals. Once you have a good, bubbly culture, transfer it to a wide-mouth glass or plastic jar with a plastic lid. I like to use

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peanut-butter jars. They have straight sides, are easy to clean, inexpensive, and easy from which to pour.

After you put the starter into its nonmetallic container, make sure it is covered but that the cover is not air tight; the starter needs to breathe. (When I use a peanut butter jar, I just screw the cap on a half to three-quarter turn and it works fine.) Place the jar in the refrigerator. If the culture gets too active, it could expand enough to grow out of its container onto the counter.

You will note that we did not use commercial yeast to create the starter. We are not looking to create a starter from commercial yeast. That will not give us the desired flavor. We also did not add sugar to the starter mixture. You should never add sugar to your starter because the yeast prefers to feed on the sugar instead of breaking down the flour. When the yeast feeds on sugar, it overfeeds and becomes sluggish. We want the starter to contain active yeast and not “couch-potato” yeast.

Some starter recipes recommend introducing wild yeast from other sources such as grape skins, boiled-potato water, or even mash potato flakes. If you feel adventurous you can experiment with these items, but make sure that you always use things that will ferment without spoiling. Milk or egg products should NEVER be added to a fermenting culture because they will introduce unfavorable bacteria and ruin the culture.

You may ask where the wild yeast and bacteria came from for the newly-created starter. The answer is from the flour and from your environment. The wild yeast and bacteria in your sourdough starter are likely to be different from the yeast and bacteria in starter created in another location. Some books suggest that if you move cross-country and take your starter, the new environment may affect the starter causing a subtle variation in flavor.

Care and Feeding of Your Starter

A sourdough starter is a collection of living organisms and there is no more work in caring for it than caring for a houseplant. You only need to feed and water it regularly. How much food and water depends on the starter's activity. Most people keep their sourdough starter in their refrigerator, not to keep it from spoiling, but to lower its activity level. You could keep your starter on your kitchen counter, but it gets quite active at room temperature. I did this once as an experiment. My room-temperature starter grew out of its jar and out on the counter! The starter was still usable, but I did have a mess to clean up and scolding a starter does no good.

You could read five different books on sourdough and get five different opinions on how to care for the starter. Some authors advise feeding a starter every three days, others recommend feeding it every seven days. I even read one book that suggested hanging a calendar on your refrigerator with the feeding days marked on it. In my mind these suggestions are ridiculous. How many of you keep a calendar to water your houseplants or your garden? Automatic sprinkler systems aside, you water your plants when they need it. The same applies to sourdough starter. You feed and water the starter when it needs it.

How can you tell your starter needs to be fed? When a layer of liquid forms on top of the starter it means the starter is getting hungry. When the layer of liquid on top of the starter turns dark

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and murky it means that the starter is really hungry. If you notice the liquid layer is turning black, feed the starter that day. The liquid layer is composed of the organic alcohol that was formed during fermentation and these waste products have no adverse affect on your starter. Just stir the liquid into the starter before use.

If your starter has not been used in a while, it may have become dormant. Relying on sourdough starter alone to leaven the dough requires that the starter is fresh and active. To activate a dormant starter, just start a feeding cycle. Add about 1 cup of flour and enough water to make it the consistency of thick pancake dough. Stir vigorously to aerate it. If you intend to use the starter in the next day or two, let it sit on the counter for about an hour and then refrigerate it. The amount of time the starter spends at room temperature is not critical. The only constraint is to not leave it out so long that it grows out of its container onto the counter—unless you like cleaning up messes. If you are not going to use the starter for a few days, you can place it directly into the refrigerator after feeding it. The starter will continue to grow under refrigeration, albeit it at a slower rate than at room temperature. The next time you pull out your starter, it will reward you with its familiar bubbly appearance, much as a dog greets its master with a wagging tail.

Many books on sourdough cooking instruct the cook to throw away half the starter before feeding it. Discarding starter has nothing to do with the feeding cycle or its fermentation. The only reason to throw away starter before adding flour and water is to make sure the starter still fits into the jar! If you have a container that accommodates multiple feedings, such as a large peanut butter jar, you don't have to worry about the starter growing too large for the container. Besides, you should be using your sourdough starter. That's the point. If you don't feel like making sourdough bread, make pancakes, cookies, or brownies.

Getting Sourdough to Work on Your Schedule

Making bread is time consuming because you have to incorporate the rise time into your schedule. Commercial yeast is designed to achieve a maximum rise within a couple of hours. Most likely you do not want to make sourdough bread that rises within a couple of hours. That isn't enough time for the dough to develop a nice sourdough flavor, which comes from the lactobacillus bacteria that grows slower than the yeast. It can take twelve hours to twenty-four hours for dough to develop a full sourdough flavor.

You can use the lengthy sourdough rise time to your advantage. Plan on making the sourdough the day before you intend to bake it and let it rise overnight. Or start the sourdough in the morning and let it rise during the day. Plan the rise time around your schedule. In order to prevent the yeast from consuming all the food during a lengthy rise cycle, allow the dough to rise in the refrigerator.

Have fun and enjoy baking with sourdough.

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For Further Reading

Classic Sourdoughs: A Home Baker's Handbook, by Ed Wood, published by Ten Speed Press, Berkeley, CA, 2001. ISBN 1-58008-344-7

This is my favorite sourdough recipe book. I like its traditional sourdough focus. This book taught me that yeast is not necessary in sourdough recipes. There are no recipes in this book that use commercial yeast. If you are a sourdough purist looking for recipes that only use sourdough starter or natural leavening, this book is for you.

Sourdough Cookery, by Rita Davenport, published by HP Books, Tuscon AZ, 1981, ISBN 0-89586-155-0

This is the book that got me started using sourdough for things besides bread. I always turn to *Sourdough Cookery* first when looking for a non-bread sourdough recipe. This book has recipes for yeast breads, quick breads, rolls, biscuits, muffins, cookies, brownies, cakes, and even suggestions for using sourdough in main dishes. Sourdough purists may be disappointed to find that most of the recipes use active dry yeast, baking powder, or baking soda in addition to sourdough starter, but I like this book for its recipe variety rather than its non-traditional sourdough approach. Unfortunately this book is out of print. If you can find this book at a used book sale, I recommend you get it, lock it up, and don't loan it out.

The Bread Baker's Apprentice: Mastering the Art of Extraordinary Bread, by Peter Reinhart, published by Ten Speed Press, Berkeley, CA, 2001. ISBN 1-58008-268-8

Although this is a cookbook with recipes, it reads like a well-written textbook, partly because the author teaches at a culinary university. There is a lot of information here about bread and I recommend this book for those wanting to develop their bread-making skill. I like this book because it explains the different basic bread types and how to make them, including the differences between firm dough, normal dough, and rustic or slack dough. (This book gave me the confidence to work with slack dough.) I also like the pictures of the many different ways one can form bread dough—I still have not tried them all. This book also explains how to make bread by weighing ingredients using Baker's percentages, although all the recipes are in volume measurements for home use.

The Laurel's Kitchen Bread Book: A Guide to Whole-Grain Breadmaking, by Laurel Robertson, published Random House, New York, NY, 2003. ISBN 0-8129-6967-7

There are a few sourdough recipes in this book and they include commercial yeast but the emphasis is on whole-grain ingredients. Those wanting to expand their repertoire of wheat bread should take a look at this book. There are recipes made with whole-wheat, rye, soy, and rice flours, as well as sprouted wheat berries.

The Bread Builders: Hearth Loaves and Masonry Ovens, by Daniel Wing and Alan Scott, published by Chelsea Green Publishing Company, Vermont, 1999. ISBN 1-89013-205-5

This book has no recipes. But, if you are looking to understand the how and why of bread making, consider this book. There is plenty of information here, much like a science book on bread. I like this book because it explains what is happening within the dough as I make

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it and within the bread as I bake it. The first half of the book describes the naturally leavened bread process, including the biology of fermentation. The second half explains masonry ovens and how to bake with them. Although the focus is on masonry (brick) ovens, the techniques also apply to using baking stones in your home oven.

The King Arthur Flour Baker's Companion: The All-Purpose Baking Cookbook, by The King Arthur Flour Company, published by The Countryman Press, Vermont, 2000. ISBN 0-88150-581-1

Although this book has a few sourdough recipes, its broad collection of baking recipes pretty much cover anything the home baker needs. I like the baking tips sprinkled throughout the text and the comprehensive, descriptive chapters on ingredients and baking tools. This book doesn't have the detail of *On Food and Cooking*, by Harold McGee, but it is much more readable for someone wanting a general exposure to baking and, unlike McGee's classic, it has recipes.