Baking Bread - The Beginner's guide.

Baking bread is really very simple. All you need is one basic recipe, and then, you can build on that recipe to create your own signature bread.
For each cup of flour, add 1/3 cup water, 1/3 tsp salt, 1/3 tsp active dry yeast. Then, you would create what is called the sponge by mixing all the liquids and yeast, and half the flours, excluding the salt. The resulting batter must then rest until it becomes bubbly, usually about 1/2 hour. Then, add the remaining flour and salt, and mix until the mixture becomes a dough. Knead the dough until it becomes elastic and silky, which usually takes about 5-10 minutes. Then, let the dough rest until it doubles in size, which is usually about 1 hour. Then, briefly knead the dough again. This process is referred to as the "punch down." Using a knife, cut the dough into the desired loaf sizes.. Shape each portion into a loaf, or, if you prefer to bake in a pan, put each portion into baking pans. Let the dough rise until doubled or tripled in size, then bake in a pre-heated oven at 400 degrees F for 50 minutes.
For example, a recipe that produces two loaves of white bread would be as follows:

Sponge:

2 1/2 cups unbleached bread flour
1 2/3 cups warm water
1 2/3 tsp active dry yeast
Mix until mixture reaches batter consistency
Let sit until bubbly

Dough: *Add the following to the sponge:*

2 1/2 cups unbleached white flour
1 2/3 tsp salt
Mix until mixture reaches a dough-like consistency
Knead for 10 minutes
Let rise until doubled
Punch down
Cut into 2 using a knife
shape into loaves
Proof until a bit more than doubled in size

Bread:

Bake for 50 minutes in an oven pre-heated to 400 degrees F.
Although this might sound simple, there are many HYPERLINK "tricks.html"tricks which make bread baking an art form. And you will need to learn a bit about HYPERLINK "flour.html"flour too before you can master the art of bread baking. Finally, once you've become a bit more experienced, you might also want to learn more about baking with sourdough by looking at our HYPERLINK "introsour.html"introduction to sourdough, or, if that is not challenging enough, then step into the HYPERLINK "proof.html"proof box for the full story on sourdough.
Don't forget to share the recipes you create with the rest of the internet community by posting them to our HYPERLINK "recipes.html"recipe bin. You can also ask us any

questions you might have about baking.

Welcome to the Grain Bin

This section of the Village Bakery covers everything you always wanted to know about the ingredients needed to bake a loaf of bread. We'll try to make it as comprehensive as possible, and include such things as nutritional information and sources where to buy ingredients. Keep coming back to this section as it grows.

Flour and Grains

First and foremost, in order to bake good bread, you need a good understanding of its most important ingredient, namely the flour. Before we loose ourselves in enumerating all the types of flour out there, it behooves us to first learn more about grains. This is, after all, a reasonable place to start.

In general, a grain is made up of four parts. At the very center of the grain is the germ, which can be thought of as the embryo of the seed, just like the yolk in an egg. Then, there is the endosperm, a substance containing both protein and carbohydrates which is there in **principle to nourish the embryo during germination, and plays a similar role to the egg white in an egg. Then, there is a bran layer around the endosperm. Finally, there is the seed hull, which surrounds and protects the entire grain. Although eatable, this part in most cases is unpalatable and is removed before use. In some cases, as in wheat, for example, centuries of breeding have lead to strains where the hull readily falls off and is no longer necessary to protect the grain. Although most seeds will no longer germinate, wheat is one of those unique seeds that will germinate even without the hull. As we go through all the different types of grain, these distinctions will become clearer.**

Now what does it all mean from a nutritional point of view? All the various parts of the grain play a role in the human diet. As your mother probably has told you over and over again, whole wheat flour is better than white flour. So what's the big deal here? Modern milling processes have made it possible to separate the grain into the germ, the endosperm, and the bran. The endosperm is what makes up white flour. Initially, that seemed like a good idea to only use the most "nutritious" and palatable part of the grain. Not to mention the fact that the endosperm contains all of the gluten, which is the part of the grain that makes bread dough elastic and allows the dough to rise by trapping gases formed by fermentation. Well, that was before people figured out that fiber is a necessary part of a nutritious diet leading to healthy bowel movements. That's where the bran layer of the wheat kernel becomes important. But the bran layer doesn't just provide healthy fibers. The latest research shows that the outer layers of grains contain important vitamins and phytochemicals that help prevent cancer and lead to lower cholesterol levels.

Here's a summary of the role the different part of the grain play:

Germ:

Germ is sometimes omitted from whole wheat flour to improve the shelf life of the flour.

High in oil, and if in contact with the atmosphere, will go rancid quickly. Good source of Vitamin E.

Endosperm:

Makes up white flour Contains lots of carbohydrates, and proteins, including the gluten, which is indispensable in bread baking. Generally low in vitamins.

Bran:

Included in whole grain flour. Good source of fibers, vitamins, and phytochemicals.

Hull:

Unpalatable in some grains, included in others. Excellent source of fiber, vitamins and phytochemicals

Now, we are ready to navigate through the world of grains. You'll be surprised as to the variety of shapes, sizes, tastes and attributes that are available. In recent years, many grains that almost went extinct with the demises of great civilizations such as the Aztecs and Incas are making a comeback. The rich heritage associated with grains can really add value and pleasure to the whole process of baking bread. I will try to highlight the rich cultural heritage associated with grains as often as possible. Feel free to E-mail me if you know anything that should be added.

The list of grains is broken up into three sections.

1. HYPERLINK "grainstaples.html"Bread Staples.

All of the grains in this category have the property that bread can be made from flour derived purely from one of the grains, without the addition of gluten, or any other type of flour. The list includes wheat (obviously), rye, barley, kamut, spelt, triticale, and buckwheat. Note that this deviates from what most American bread books recommend. I have enjoyed 100% pure Rye bread, and I have managed to do the same with spelt, triticale, kamut, and even buckwheat. None of these breads required the addition of any foreign agent such as gluten, xanthan or guar gum to hold it together, but each definitely required its own special procedure. Out of these grains, rye, kamut, triticale, and spelt even worked in my bread machine. Now if you measure the success of your loaves of bread by how much they resemble Wonder bread, then stay away from all of these grains, and stick only with the modern wheat hybrids. I'm not trying to criticize white bread. Even I have been known to sneak into the kitchen and make the most unhealthy loaf of white buttermilk bread using yeast and using my bread machine.

2. HYPERLINK "grainbeady.html"Beady grains for added crunch

This category includes amaranth, quinoa, millet, and teff. These grains all share the property that although they are physically just tiny little beads, they are nutritional powerhouses. None is suitable for making bread without the addition of wheat flour, gluten, xanthan or guar gum, but, added whole and in small quantities, they will add a pleasant crunch to the bread, while enhancing its nutritional value.

3. HYPERLINK "grainelse.html"Everything else

This category includes corn, rice and oats. Each of these grains really fits into a category of its own. It is possible to make pure corn bread, but some people might argue that's not really bread. In fact, spoon bread, which is pure corn bread at its

best, is more reminiscent of quiche than bread. Corn is actually considered a vegetable by some, but it definitely looks like grain to me.
Oats, on the other hand defies any attempts at forming anything that's even reminiscent of bread. That's why it's in this category. Although oats are closely related to wheat, rye and barley, a loaf of 100% oat flour, or even a cookie made of 100% oat flour will crumble instantly in your hands.
Finally, rice is a truly unique grain. Although rice is primarily used a a cooking grain, it has the unique property of being 100% gluten free, and thus, people with Celiac's disease, and other gluten intolerant folks have set out to design recipes that use primarily rice flour, and that employ xanthan gum to hold the bread together.

Staple Bread Grains

All of the grains in this category have the property that bread can be made from flour derived purely from one of the grains, without the addition of gluten, or any other type of flour. The list includes wheat (obviously), rye, barley, kamut, spelt, triticale, and buckwheat. Note that this deviates from what most American bread books recommend. I have enjoyed 100% pure Rye bread, and I have managed to do the same with spelt, triticale, kamut, and even buckwheat. None of these breads required the addition of any foreign agent such as gluten, xanthan or guar gum to hold it together, but each definitely required its own special procedure. Out of these grains, rye, kamut, triticale, and spelt even worked in my bread machine. Now if you measure the success of your loaves of bread by how much they resemble Wonder bread, then stay away from all of these grains, and stick only with the modern wheat hybrids. I'm not trying to criticize white bread. Even I have been known to sneak into the kitchen and make the most unhealthy loaf of white buttermilk bread using yeast and using my bread machine.

Barley

Now here's a versatile grain that can be used in just about all kinds of baking, including bread, pancakes, and in brewing beer. Although most books recommend adding only small amounts of barley flour to bread, it is possible to make bread out of just barley alone because it has a small amount of gluten. Barley is also loaded with enzymes that accelerate fermentation. It's no coincidence that barley is used in brewing beer. If you bake with sourdough and like your bread very sour, then you'd be advised to add some barley flour to your bread.
Barley is a member of the grass family. Unlike wheat, barley has an outer hull which needs to be removed before processing. Once the hull is removed, there still is an outside layer of bran just like in wheat berries. This outside layer of bran is removed in a process called pearling. What is left behind is called pearled barley. When buying barley, make sure you get hulled barley, not pearled, since the latter is definitely not as nutritious. Hulled barley will not sprout, so if you are looking to produce malt, you will need the full barley grain with hull. Note that there is a new strain of barley with a hull that is easy to remove. I personally have not seen this, and wouldn't know where to buy it either.

Nutrition: Barley is a good source of polysacharides, tocotrienol, beta-glucans, and pentosans. These are known to lower cholesterol levels. Barley is also a good source of chromium, a trace mineral that helps regulate blood sugar levels. Barley is also known to have anti-viral properties.
Baking: Barley will enhance fermenting when using sourdough. Use as much barley as you wish in recipes. Be forewarned that barley does have a distinct "farmy" taste that might take some getting used to. If you want to make 100% barley bread, I suggest you use 50% hulled barley, and 50% pearled barley. This will reduce some of the fiber which interferes with the rather fragile type of gluten found in barley.

Buckwheat

Contrary to what the name might suggest, buckwheat is completely unrelated to wheat. This grain originated in central Asia, and is used in traditional Japanese cooking. This grain is available in hulled or hull-less form. It is possible to make bread entirely out of buckwheat, because of small amounts of gluten in the grain, but the bread will be rather dense. The flavor is also very strong. I suggest you start with hulled buckwheat, which has a much milder flavor.
Nutrition: Has rutin, an anti-oxidant flavonoid phytochemical. High in protein. Good source of the amino acid Lysine Excellent source of trace minerals

Kamut

Kamut is an ancestor to Durum wheat, the grain cultivated today for making semolina pasta. It is cultivated in Africa, and nowadays, it is also cultivated in the United States. Readily available in health food stores, this type of wheat has found its way into a whole slew of alternative products, ranging from bread made entirely from Kamut flour to pasta and breakfast cereals. Even the popular food chain "Trader Joes" in the Western part of the US now carries Kamut flakes.
One of the reasons for making such a comeback is that Kamut is more nutritious than modern wheat strains, providing lots of protein, B-vitamins, and trace minerals.
The grain is suitable for making bread, and requires no other flour to be added. Because the grains are so large, the ratio of endosperm to bran is larger than regular wheat, and the resulting bread has a mild flavor.
This type of grain is also quite suitable for making whole grain pasta. Kamut is definitely a must in anyone's pantry.

Rye

In the same family as wheat, rye is another bread super-grain. Its hull readily falls off, and the rye berry remains sproutable even without its hull. Being a very hardy grain that can grow in poor soil and climates with a very short growing season, it is no coincidence that rye is a staple bread grain in northern Europe and Russia.
Rye is somewhat more nutritious than wheat since it has an amino acid profile that is higher in lysine, and because it is an excellent source of trace minerals. Rye also contains phytic acid, saponins, phytoestrogens, rutin, (a flavonoid) and a good dose

of insoluble fiber. The bottom line: it's really good for you.
Now we are going to spend a lot of time talking about Rye and bread baking. Although not as high in gluten as all the other wheats, 100% rye bread is doable, although it will be considerably denser than its 100% wheat bread counterpart. But rye has gotten a bad rap in the US, simply because somehow, rye has gotten associated with caraway seeds. Not to offend all the caraway afficionados out there, but few people like caraway in bread. This is why most people react with the familiar "rye bread? yuck!" syndrome.
Granted that 100% whole rye bread is probably a cultural appreciation to be learned, rye nevertheless, when added in as much as 60% with 40% wheat will make a loaf of bread that is considerably moister than whole wheat bread, and the flavor of rye without caraway is truly fabulous, with its earthy undertones. Rye also has lots of enzymes that favor fermentation, hence it is a good sourdough enhancer. Because of the alkalinity of Rye, sourdough is often used as a dough conditioner for Rye bread.
When baking with rye, make sure you compensate for the fact that Rye will absorb more water. You will be delighted by the added moisture in the bread.

Spelt

Like kamut, spelt is another ancient wheat. Because this grain grows well at high altitude, it is well known in the alpine highlands of Austria, Switzerland, and Germany, where it is known as "dinkel." It has similar nutritional attributes as wheat.
It is possible to make 100% spelt bread, since spelt has enough gluten. Spelt has an uncanny ability to complement rye. A mixture of Rye and spelt will rise better than bread made out of 100% of either rye or spelt.
Note that like barley, spelt must be hulled for human consumption. Hulled spelt berries will not sprout.

Triticale

Triticale is a cross in between wheat and rye, and is self-seeding. It inherits all of the characteristics of its parent grains, wheat and rye. The result is a grain much higher in protein, but, just like wheat, the protein is incomplete because it is low in lysine and methonine. Triticale contains phytic acid and phytosterols, all of which are postulated to be cancer preventive.
For baking bread, triticale flour works just fine on its own. The taste is much like whole wheat, but the consistency is denser than wheat. The gluten in triticale is also more fragile than for wheat, hence it is best to only let the dough rise once.

Wheat

Wheat is the staple grain for any bread baker. The very characteristic that makes a grain suitable for leavened bread has been optimized through centuries of breeding. Nowadays, stains of wheat are grown that have as high as 18% gluten content, the substance which gives bread the ability to trap gases produced from fermentation

and rise.
Technically, wheat refers to a whole family of plants, including kamut and spelt. But for labeling purposes, when we speak of wheat, we refer to the modern hybrids of wheat grown today.
When buying wheat, there are three characteristics that have to be specified: whether the strain is "hard" or "soft", "white" or "red", and "winter" or "spring."
"hard" wheat is wheat that is very high in gluten, and therefore best suited for bread baking. Most likely, your bread flour will be milled from a type of hard wheat. "Soft" wheats are lower in gluten and are therefore best suited for confectionery and pastries.
"winter" or "spring" refers to how the wheat is grown. In milder climates, wheat may be planted in the fall. In the winter, the wheat will go dormant, and resume growth in the spring. This type of wheat is called winter wheat. In areas where the winters are too harsh, spring wheat is planted in the spring and harvested in the latter part of the summer.
Finally, "red" and "white refers to the color of the wheat. The color primarily makes a big difference in taste. The nutty, somewhat bitter flavor of whole wheat comes partly from the tannin found in red wheat. White wheat is a strain of wheat that lacks tannin and therefore has a milder taste. Soft white wheat has always been grown for pastries. Although very common at the turn of the century, hard white wheat has been hard to find until recently. Hard white wheat is making a strong comeback. Also known as Montana Gold wheat, hard white wheat is definitely the choice grain for whole wheat bread.
Most likely, the hard white wheat that used to be grown around the turn of the century was Pacific Blue Stem. This type of wheat is what made San Francisco sourdough famous. Because it is difficult to process, this type of wheat was phased out in favor of the Turkish red wheats that became common in America's farmlands.
Another very famous hard wheat type is durum wheat, which is used for making semolina pasta and couscous. This wheat is much harder than any bread wheat, and has a type of gluten that is less elastic, and therefore not as suitable for bread baking.
Beside these wheats mentioned above, there are virtually thousands of strains of wheat. The wheat mentioned above are referred to as Triticum Aestivum, a wheat that found its beginnings in the Indus Valley in Iran. In the regions of Europe and the Alps, the wheat that was grown in the first millennium B.C. was triticum spelta, the ancestor to today's revived spelt.

Beady grains for added crunch

This category includes amaranth, quinoa, millet, and teff. These grains all share the property that although they are physically just tiny little beads, they are nutritional

powerhouses. None is suitable for making bread without the addition of wheat flour, gluten, xanthan or guar gum, but, added whole and in small quantities, they will add a pleasant crunch to the bread, while enhancing its nutritional value.

Amaranth

Amaranth is very much unlike any grains you might be familiar with. Two to three times the size of poppy seeds, Amaranth was originally cultivated by the Aztecs, and is native to the Americas. Of course, there are many types of amaranths. Some are cultivated for the seeds, and others are cultivated for the leaves, which can be quite tasty. You'll have to go to your local health food store to find this grain, and you will notice that amongst the many tiny beige granules, there will be an occasional black speck. Those black specs are actually wild Amaranth grains that inevitably make their way into the crops.
Nutrition: Amaranth is not hulled, and thus is an excellent source of insoluble fiber. Good source of Vitamin A, E, and Calcium. Very high in protein, rich in the amino acids lysine and methionine. Poor source of leucine. High in the compound squalene, which is thought to lower cholesterol.
Baking tips: Flour made out of this grain will not make bread that can be leavened. The addition of gluten, guar gum, or Xanthan gum might make a bread that can be leavened. I've tried making pure amaranth bread, and I must say, the bread tasted like lawnmower clippings. So I suggest adding the grain whole to breads for extra crunch. I've not tasted the lawnmower flavor when using the grain whole.

Millet

Like amaranth but slightly bigger, millet kernels are much like sand grains. Unlike amaranth, though, millet must be hulled for human consumption. Millet is somewhat of a poor label, though, as "millet" encompasses a whole variety of grains, including Teff, an Ethiopian staple, and sorghum, a Himalayan staple that is now cultivated worldwide for animal food and for making sugar.
Millet will NOT make good bread by itself, as it is very low in gluten.
Nutrition: Rich in phytochemicals, including Phytic acid, thought to lower cholesterol, and Phytate, which is associated with a reduced cancer risk.
Baking tips: Add millet whole to breads to make the bread crunchier. Note that because millet absorbs a lot of water, you will need to add liquids proportionally.

Quinoa

Quinoa is another bead-like grain very much reminiscent of millet. As the staple of the Incas, this grain would now be extinct if it were not for the few peasants who continued its cultivation. Very much like many of the other ancient grains, Quinoa has made a recent comeback, and is widely available in health food stores.
Out of all the grains in this list, quinoa is definitively the best protein source. The grain is rich in the amino acids histadine, lysine, methionine, and cysteine, forming a complete protein source. Quinoa is higher in vitamins and minerals than most of the other grains. Quinoa is also rich in phytic acid and saponins, two compounds

associated with lower cholesterol levels and cancer preventing attributes.
In baking, quinoa is best added whole. Do not attempt making bread with quinoa alone, as when ground, it takes on a grassy flavor. The grains can be added whole to any bread to add crunchiness and to raise the nutritive value of the bread. If you're not much for crunchiness, but would still like to take advantage of the nutritional benefits of quinoa, cook the quinoa first in a steamer before adding to bread.

Teff

Teff is another type of millet grown in Ethiopia which is very drought resistant. This grain is extremely small, hence its name, which is "small" in Amharic.
Depending on which type of Teff you might come across, its color can be dark red, brown, or ivory. In any case, being so small, regardless of its color, the grain is unprocessed, and therefore is a good source of fiber. Teff can be added whole to add extra crunch to a loaf of bread.

All Other Grains

This category includes corn, rice and oats. Each of these grains really fits into a category of its own. It is possible to make pure corn bread, but some people might argue that's not really bread. In fact, spoon bread, which is pure corn bread at its best, is more reminiscent of quiche than bread. Corn is actually considered a vegetable by some, but it definitely looks like grain to me.
Oats, on the other hand defies any attempts at forming anything that's even reminiscent of bread. That's why it's in this category. Although oats are closely related to wheat, rye and barley, a loaf of 100% oat flour, or even a cookie made of 100% oat flour will crumble instantly in your hands.
Finally, rice is a truly unique grain. Although rice is primarily used a a cooking grain, it has the unique property of being 100% gluten free, and thus, people with Celiac's disease, and other gluten intolerant folks have set out to design recipes that use primarily rice flour, and that employ xanthan gum to hold the bread together.

Corn

A staple of many cultures of the Americas, corn hold a special place as a grain because of its rich heritage and its unique flavor. It is also the most ornamental of all the grains. The unique mixed colors of certain strains of corn take up rooms as decorations in many homes. Native to the Americas, corn comes in many colors. There are many varieties that make corn more or less suitable for special culinary uses. One variety that makes great pop corn will be inedible as corn on the cob. Other varieties are grown simply to be eaten fresh like a vegetable, and shrivel up when dried.
If you grow weary of the old wheat taste, then spice up your bread diet and substitute a cup or two with corn flour in your next recipe. You'll like the results.
Baking: Pure corn bread comes best in the form of corn tortillas and spoon bread. Otherwise, you're advised to always add a decent amount of wheat flour to hold the

bread together. Even recipes with as little as 1/2 cup of corn flour to three cups of bread flour will have a great "corn-like" flavor and a unique crumb.
Nutrition: Corn is rich in minerals thiamine and vitamin B-6. It is also the only grain with a copious amount of vitamin A. 1 cup of corn flour provides 10% of the US RDA of vitamin A. Corn is a good source of protein, but has only small quantities of lysine, an essential amino acid. Therefore corn is most nutritious when combined with beans, Amaranth, quinoa, or other lysine rich foods. On the other hand, corn is a good source of Leusine, another essential amino acid.

Oats

Everyone is familiar with oats in one shape or another. Unlike wheat, oats need to be dehulled before consumption. Oat groats are what is left over after dehulling.
Never mind making bread with just oat flour. Even if you plan to add lots of gluten, xanthan or guar gum. It just won't work, take my word for it. I've tried, and the bread just falls apart, never mind the fact that the bread collapsed while rising. Add oats only in small proportions to wheat flour.
I have not seen refined oats on the market, i.e. oat flour where the bran has been removed. Therefore, under whatever form you bought your oats, they'll always be a great source of fiber, and on top of that, the fiber is soluble, which supposedly helps to lower cholesterol levels.
But there are lots of other benefits in oats besides fiber. Oats are an excellent source of B-vitamins and minerals. Add to that an abundant supply of protein and vitamin E in the form of alpha tocotrienol, and you've got yourself one heck of a superfood. Oats also contain Beta-glucan, a type of gum fiber, and two saponin type phytochemicals known as avenacoside A and B, which are all associated with lowering cholesterol levels. The saponins found in oats also act as antibiotics. Oats also provide a good supply of phytoestrogens, which are chemicals that mimic (to some extent) the effects of estrogen.

Rice

Although usually a grain more suited for cooking, rice is used for making bread primarily because it is the only grain that can be tolerated by people suffering from celiac disease, a condition that is characterized by a gluten intolerance.
To take advantage of the nutritional benefits of rice, you will have to stick with brown rice, which is essentially hulled rice. White rice no longer has the outer bran layer, and as a result, has lost most of its vitamins, minerals, and cancer preventing, cholesterol lowering phytochemicals. The bran is an excellent source of B-vitamins, minerals, tocotrienols, (forms of vitamin E) and phytochemicals such as beta sitosterol.
For baking, rice can be cooked and added whole. Rice can also be milled For 100% rice bread. You will need to add xanthan gum if you intend on leavening the bread with yeast or sourdough, and you will need guar gum if you intend on using baking powder. Baking soda will not work unless you add enough sweeteners to lower the

pH accordingly to activate the baking soda. Yes, rice has a very high pH, i.e. low acidity, and therefore, it will behoove you to add ascorbic acid or acetic acid (vinegar) to help out the yeast, which prefers acidic environments.

Introduction to Sourdough

Sourdough bread is made by replacing the yeast with a sourdough starter. Before we venture in the whole world of sourdough, let's explore what yeast is. Yeast is a one celled plant, (more exactly, a fungus) which digests the sugars and starches in flour. In the process, it produces alcohol and CO2, which causes the bread to rise.
In the old days, people did not have access to dry, or cake yeast, and the only means of leavening bread was to set out a batch of flour and water, and literally letting it rot. And the rotten batter of flour and water is what today is called a sourdough starter. From a scientific perspective, the sourdough starter is a living froth of lactobacilli and yeast which live off the complex carbohydrates in the flour. Although the lactobacilli don't contribute much to the leavening process, they do produce lactic and acetic acids which both promote a very acidic environment for the yeast to live in. While yeast loves to hang out in very acidic places, other organisms don't, and thus, the lactobacilli provide a preserving environment for the yeast. Of course, the lactobacilli and the yeast interact in a much more complex way with each other. These symbiotic interactions are what makes it possible to keep a sourdough starter around for long periods of time.
The acids in the sourdough starter are exactly what gives sourdough bread it's tangy flavor. The basics of how to make sourdough bread is straight forward once you have a starter. For example, here's a great San Francisco Sourdough recipe for two loaves:

Sponge:
1 2/3 cups unbleached bread flour
1 1/3 cups warm water
1/2 cups starter
Mix until mixture reaches batter consistency
Let sit until bubbly

Dough: *Add the following to the sponge:*
3 cups unbleached white flour
1 2/3 tsp salt
Mix until mixture reaches a dough-like consistency
Knead for 10 minutes
Let rise until doubled
Punch down
Cut into 2 using a knife
shape into loaves
Proof until a bit more than doubled in size

Bread:
Bake for 50 minutes in an oven pre-heated to 400 degrees F.
Now, all you need is to learn how to make, keep, and nurture a sourdough starter. If you

have read this page all the way to this point, then you should go to the next step, and become a real expert by stepping into the HYPERLINK "proof.html"proof box for the full story on sourdough.

The sourdough Proof Box

Welcome to the Sourdough proof box. We hope you will enjoy this guide to baking with sourdough. Since this is the World Wide Web, you can expect this page to grow and change over time. For now, this page includes the following sections:
HYPERLINK \l "getting"Guide to getting a starter
This is a short guide on how to get a hold of a starter. It includes information on how to make your own from scratch, and on how to generate a starter from a batch of innoculent rceived from a friend.
HYPERLINK \l "using"Guide to using a starter
Using a starter can be tricky. This guide will help you understand a bit more how to maximize your starter's returns.
HYPERLINK \l "keeping"Guide to keeping a starter
Once you have a starter, here's a quick maintenance guide on how to care for it, and on how to revive it if you've left it in your fridge too long and it ends up resembling some biology experiment gone awry. There is also a short guide on how to dry a starter to be used later to revive a new starter.

Getting a starter

Before you can bake a a sourdough loaf, you need to have a starter, which you can get in one of three ways:
HYPERLINK \l "make"Make your own from scratch
HYPERLINK \l "friend"Get some from a friend
HYPERLINK \l "buy"Buy a starter

Guide to making your own starter from scratch

There are many ways of making your own starter. Here are a few different ways of doing it:
(No offense to the sourdough purist, but by our definition, If the final product ends up to be a mixture of lactobacili and yeast, then you have a starter, regardless of how you started it.)

1. HYPERLINK \l "purist"The purist approach
2. HYPERLINK \l "german"The Northern European purist appraoch
3. HYPERLINK \l "natural"The natural innoculant approach
4. HYPERLINK \l "shortcut"the shortcut approach

1. The Purist Approach

Some people will argue that this is the only way of creating a pure sourdough starter, and they maybe right. Sourdough is like cheese: there are different cultures out there, and the only way of creating a unique culture of your own is to start with just flour and water, and invite the local micro-organisms for a royal feast.
Mix 1 cup of water and 1 cup flour in a bowl, cover, and put into a warm place.
After 1 day, add another 1/2 cup water, and another cup flour, and put into a warm place.
Repeat this procedure until the batter starts to smell sour, fruity and yeasty. Then, refrigerate. (Sorry, as of yet there is no smell links on Netscape)

2. The Northern European Purist Approach Scandinavians, Russians and Germans came to recognize that certain flours produce much faster fermentation. A case in point is Rye flour, and this flour will invariably produce a very viable starter in a very short amount of time. The procedure is identical to the purist approach, exept that Rye flour is used instead of White flour.
Mix 1 cup of water and 1 cup rye flour in a bowl, cover, and put into a warm place.
After 1 day, add another 1/2 cup water, and another cup flour, and put into a warm place.
Repeat this procedure until the batter starts to smell sour, fruity and yeasty. Then, refrigerate.
Note that since Rye ferments so fast, it is possible to take the fermentation process too far and end up with a slurry of acedic acid. In that case, dump out 3/4 of the starter and add 1 cup flour and 1 cup water, let sit for 12 hours, and then refrigerate.

3. The natural innoculant approach
The idea here is to use a natural innoculant such as grape skins on which wild yeasts reside to get the starter going. The recipe is the same as the purist approach, exept that the batter is innoculated with grape skins, or other fruit skins or leaves. The assumption is that there are yeasts which reside on the skins of fruits or on the surface of leaves, and the hope is to introduce these yeasts into the batter to get it started faster. This assumption is quite reasonable since, contrary to popular belief, yeast is less likely to enter the batter through the air than on the surface of some substrate, such as flour or grape skins.
Mix 1 cup of water,, 1 cup flour, grape skins or other fruit skins or leaves in a bowl, cover, and put into a warm place.
After 1 day, add another 1/2 cup water, and another cup flour, and put into a warm place.
Repeat this procedure until the batter starts to smell sour and fruity. Then, sift out the grape skins, and refrigerate.

4. The shortcut approach
The idea here is to use commercial cultures to get the starter going, and then hope that the organisms will evolve into a symbiotic relationship. The recipe is the same as the purist approach, except that the batter is innoculated with commercial yeast and yogurt or buttermilk cultures.
Mix 1 cup of water, 1 cup flour, 1 tsp active dry yeast, and 1/3 cup buttermilk or yogurt in a bowl, cover, and put into a warm place.
After 1 day, add another 1/2 cup water, and another cup flour, and put into a warm place.
Repeat this procedure until the batter starts to smell sour and fruity, which is usually within 2 days. Then, refrigerate.

Getting some from a friend

Why not get some from a friend? All it takes is as little as a tablespoon. Follow this recipe to start your own batch using a small batch of inoculant from your friend.
Mix 1 cup of water, 1 cup flour, in a bowl, add whatever amount you got from your friend, cover, and put into a warm place for 12 hours.
Then, if the batter starts to smell sour and fruity, which is almost always, refrigerate the mix. If not, add another 1/2 cup flour and 1/2 cup water, mix, and wait another 12 hours. Repeat this procedure until you have a fruity and yeasty mixture, and refrigerate.

Buying a starter.

If you'd rather buy a starter than making your own, then keep checking this section. We are working on building a special buying guide for sourdough.

Using your starter

Now that you have a starter, it's time to use it. This short guide will explain you the many subtle and generally unknown aspects of sourdough. What you will learn here is the following:
HYPERLINK \l "main2"The main two ways of using sourdough starter in baking
How to maximize the leavening and flavor of sourdough
The effects that using other flours has on your starter
The effects of SOurdough on crust and bread consistency

Main two ways of using a starter

The traditional way of using a starter is to first "proof" the starter by taking it out of the fridge, and feeding it a couple of times while it sits in a warm place. Once it becomes foamy, it is ready to be used for baking. This method doesn't require the use of a sponge as described in our HYPERLINK "introsour.html"Introduction to Sourdough. Thus, once you have a "proofed" starter, you can then mix all the ingredients at once to make the dough. In other words:
4 2/3 cups unbleached bread flour
1 1/3 cups warm water
1/2 cups starter
1 1/2 tsp salt
Mix until mixture reaches a dough-like consistency
Knead for 10 minutes
Let rise until doubled
Punch down
Cut into 2 using a knife
shape into loaves
Proof until a bit more than doubled in size

Bake for 50 minutes in an oven pre-heated to 400 degrees F.
But there really is no reason whatsoever to proof the entire starter container just to make a loaf of bread. The alternative is to remove the starter from the fridge just long enough to take out whatever amount you want to inoculate a sponge, let's say 1/2 cup, and then feeding the starter by replenishing what you took out, let's say 1/2 cup water, and 1/2 cup flour. After that, put the starter jar right back into fridge. Make a sponge using the half cup of starter, all of the liquids in the recipe, and half the flour, and proof the sponge, i.e. wait that the whole batter-like mixture is nice and bubbly. Only then, add the rest of the flour, salt and other dry ingredients, and make the bread. See the recipe in our HYPERLINK "introsour.html"introduction to sourdough as an example.
This method also presents another advantage if you bake only about twice a week. The time it take the wild yeast to reach peak leavening activity depends on both temperature and how often you use your sourdough. If you keep your sourdough jar at room temperature, and you feed it every day, you will notice that the culture will go through its cycles ever more quickly. That also means it will go dormant much faster. With the starter being in the fridge all the time, this cycle is much slower, and feeding it once or twice a week is enough to keep the starter very active.

Maximizing the leavening and flavor

The previous discussion naturally leads us into the next topic, namely how to maximize the leavening power of the starter. To understand how the starter works, let's look at the life cycle of the starter in closer details. Assume you've not used your starter for a while, and you've just taken out 1/2 cup of it, and mixed that with some fresh flour and water. What you have done is added a bunch of nutrients, and the micro-organisms in your mixture, having noticed all the extra food, will start to multiply. First, the yeast reaches its peak activity, say within 2-3 hours. Then, the lactobacillus peak, sometimes up to 9 hours later. Eventually, the organisms run out of food, and the mixture will once again go dormant.
So the easy rules of thumb to follow are: give the micro-organisms food in the form of flour or sugar. This starts the cycle, which is 1)yeast peaks, and 2)lactobacillus peak later. Every time you feed, this cycle starts over. Every starter has different times for these cycles. The average is that it takes 3 hours for yeast to peak, and 10 hours for the lactobacillus to peak. But there are starters with yeast times as short as 1 1/2 hours, and as long as 8 hours. It asll depends on the culture you end up with. Now, let's translate all of that info into practical tips on making bread. The idea of using a sponge is simply to activate the yeast and lactobacillus. The trick is then to time it just right and add the remaining ingredients in the recipe just so that the yeast doesn't go dormant, but reactivates to give your bread that good final rise.
Example: let's say you're one of those puckering sour taste lovers. You want bread that makes your tongue turn inside out. Here's the trick:
let your sponge sit long enough so that the lactobacilli really have plenty of time to reach peak activity and make all those acids that are gonna flavor your bread. Then, add the rest of the ingredients, and this time around, time it so that the final rise takes place when the yeast activity peaks.
Suppose you don't care much for too sour of a taste. Then, keep the sponge around just

long enough for the yeast to reach peak activity, and then add the remainder ingredients to keep that activity going. The bread will still be sour, but much less so.
Two major factors will affect the way your culture behaves, and thus change the flavor: what you feed it, and how warm you keep it. The temperature is a real important factor: proofing at about 100 F will lead to maximizing the acetic acids in the bread, while a lower temperature around 80 degrees will generate more lactic acids.
Finally, do realize that the enzymes produced by the starter will affect the consistency of your bread, and specially the crust. It is a well known secret among professional specialty bread bakers that the best way to obtain a chewy crust is to "age" the dough. Some bakers age their dough as long as three days at very low temperatures (78-85 deg. F). That will make the crust very hard and moist. The best way to proof your sourdough bread is to get a platic box with a semi-tight lid. Put some warm water at the bottom, and put the dough t be proofed on baking sheets. The box will retain the moisture, so that the dough won't dry out during the long, cool proofs.

Keeping a starter

Now that you have a starter, it's time to worry about how to maintain it. Just follow these three guidelines:
Keep the starter in a glass container.
Feed it at least once a week.
Wash the glass container out every couple of months
Metal containers are out because the acids in your starter would quickly corrode your container. Whatever anyone says, don't use plastic containers. Plastic is an organic material, and so are the enzymes in the starter. The plastic will absorb whatever organic compounds made by your cultures.
As long as you feed the starter once a week, you will keep the lactobacillus active, so that they produce plenty of acids that act as preservatives for your starter. If you plan on not using the starter for an extended period of time, put all of the starter in a bowl, and wash out the jar before putting all of the starter back. That way, there will be no dried up flour caked on the insides of the jar. (The stuff caked on the sides is usually the first stuff to go moldy). Do this wash procedure every few months even if you use the starter on a regular basis.
There are two ways to store a starter in a dried form. 1) Dry the starter on a sheet of wax paper, 2) Dip a cloth into the starter, and let it dry. Either methods require you to first bring the starter to full active status. That means, feed the starter, and wait for the yeast to reach peak activity before drying it. In the case of a cloth, once the cloth is dry, fold it up, and store it away in a cool, dark place. In the case of the wax paper, scrape the dried starter into a jar, and store in a cool, dark place.