



The Art of Baking Bread

THE ESSENTIAL INGREDIENTS

The ingredients that go into a loaf of bread are simple — flour, yeast, liquid, and salt. Other ingredients can be added depending on the flavor, texture, and nutritional value you are looking for. Any combination is wonderfully complex. The nature of the ingredients, their proportion, and the way they are combined makes a difference in the final product.

THE ART OF BAKING BREAD

All ingredients should be near room temperature, about 75°F. A quick minute on HIGH in the microwave will warm a cold cup of milk to about that temperature. To activate the yeast, liquids need to be 100-115°F for active dry yeast or 120-130°F for quick-rise yeast. On a cold day, warm the mixing bowl in a warm oven to speed rising time. Often the first step in a recipe is proofing the yeast, or allowing the yeast to soften in warm water with some sugar. Commercial yeast is reliable if it is used before the marked expiration date, so the step of proofing the yeast (in which the surface of the yeast bubbles and foams within 10 minutes) found in some recipes can be left out. The use of quick-rise yeast allows all ingredients to be added together if the water is warm enough to activate the quick-rise yeast.

MIXING/KNEADING THE DOUGH

Once the flour is added, the dough is kneaded. The dough can be kneaded by hand or with a mixer with a dough hook, a food processor, or in a bread machine. Kneading develops gluten, the protein found mainly in wheat flour, which gives bread its structure. (If you take a well-kneaded piece of dough, roll it out very thinly and hold it up to the light, you can see the gluten structure.) The more you knead the dough (up to a point), the finer the texture will be. The kneading breaks up pockets of air being incorporated into the dough. These air pockets between the strands of gluten fill up with carbon dioxide produced by the yeast. The smaller the air pockets, the finer the bread's texture. Well-kneaded dough is smooth and satiny and has a soft, pliable body to it. Dough can be over kneaded using a mixer.



Mixed Dough



Kneading by Hand



Ready for Proofing

THE RISING PERIOD



After the dough has been fully kneaded, it is formed into a ball. Place the dough ball in a lightly greased bowl and turn to coat the entire surface so the dough will remain moist. Cover the bowl with a clean, damp towel and set in a warm place to rise until doubled. This step is also known as proofing. The optimum proofing temperature is between 80° and 85°F. One way to get the proper temperature is to turn the oven on warm for 1 minute and then turn it off, placing the covered dough in the oven to rise. Higher temperatures will force the dough to rise faster, allowing it to produce more alcohol and develop a sour taste and unpleasant

smell. The first rising generally takes 1 to 1½ hours. To determine if the dough has risen sufficiently, test for ripeness by gently denting it with your index finger. If the dent remains, the dough is ready. If the depression nearly disappears, the dough needs more time. Recipes that use quick-rise yeast usually only have one rise period. If a dough contains extra ingredients such as fruits and nuts, the dough will rise slower. Whole-grain bread dough and low gluten dough also need longer kneading times and will rise

slower. Acidic ingredients such as buttermilk, yogurt, sour cream, and lemon juice will cause the dough to rise faster.



After proofing, the bread is punched down and either shaped or allowed to rise a second time, depending on the kind of yeast used. Because the number of yeast cells have multiplied, the loaf takes about half the time as the first rise. Punching down the dough or deflating it gently with your fist redistributes the yeast and provides it with more oxygen and new food sources. It also forces out excess carbon dioxide and alcohol.

Test for Ripeness

SHAPING THE DOUGH

To shape the dough, place it on a lightly floured or oiled surface and gently shape it to avoid breaking gluten strands. If making braids, dinner rolls, or pizza crusts, the dough is easier to handle if you first place it on a lightly floured surface, cover it, and allow it to rest for 10 to 15 minutes. The gluten strands will relax, and it will be easier to handle the dough.

After shaping, the dough is set in a pan or on a baking sheet and usually left to rise again. The dough should not expand more than double in size during the last rise, as it needs growing room for the yeast to rise in the oven. If the dough over-rises, the gas cells burst, the gluten structure collapses, and so does the loaf. If the dough does over rise, simply reshape, allow to rise again, and then bake.

Here are some cool shapes:



Crescent Roll



Cloverleaf Roll



Single Roll



Knot Roll

BAKING, COOLING, AND STORING YEAST BREADS

Wide assortments of baking pans are available to bake bread. Reduce the oven temperature by 25°F to avoid overbrowning the bread when using glass or black steel pans. Black pans produce dark-crusted breads, while silver pans produce light-crusted breads. Baking stones produce a very crisp crust. Avoid using coffee cans, flower pots, or quarry tiles that are not designed for food use, as they may contaminate your bread with toxic chemicals. As a rule of thumb, bake breads with very little or no sugar, such as French bread, at 400 to 425°F, and bake breads high in sugar at 350°F. Generally, bake breads with less than ½ cup sugar for every 4 cups of flour bake at around 375°F. Yeast breads baked in a microwave oven are pale, low in volume, and tough; however, already-baked breads and rolls can be defrosted and reheated in the microwave. Reheat bread only until it's warm, as overheating in the microwave will cause a hard and tough product.

The bread is done when it has developed a golden color and loaves of bread will sound hollow when tapped, but use baking times as a guide. Typically, a loaf of bread needs to bake for 40 minutes to 1 hour. Remove the baked bread from the pan or baking sheet immediately and cool on a wire rack to prevent a soggy bottom.

To serve, slice with a serrated bread knife using a sawing motion. When the bread is completely cool, wrap in an airtight container and store it at room temperature. Storing bread in the refrigerator will cause it to dry out more quickly. Breads that contain eggs, butter, or fruit keep longer than plain bread because of the higher fat and moisture content. Freeze bread in a moisture- and vapor-proof container and use within four to six months.

NUTRITIONAL CONSIDERATIONS

Breads provide the body with complex carbohydrates (starches), which are an important source of energy. They also provide vitamins, minerals, and fiber. Using whole-grain flour or adding whole grains to your breads will increase the fiber content. MyPyramid recommends 6-11 servings of breads, cereals, rice, and pasta. One slice of bread is a serving. One slice of homemade white bread contains around 72 calories, with 25 percent of the calories coming from fat. Bread is considered a low-calorie food until you add the butter and jelly!

REFERENCES

Gisslen, W. (2004). Professional baking. Hoboken, New Jersey: Wiley.

Red Star Yeast. (n.d.). Creative bread for educators. Retrieved on February 21, 2010, from http://redstaryeast.com/lessons/classroom_baking_lessons/creative_breads_for_educators.php

Photos by: Sandra Bastin

Sandra Bastin, PhD, RD, LD, CCE
Extension Specialist for Food and Nutrition

December 2010

Copyright © 2010 for materials developed by University of Kentucky Cooperative Extension. This publication may be reproduced in portions or its entirety for educational or nonprofit purposes only. Permitted users shall give credit to the author(s) and include this copyright notice.

Educational programs of Kentucky Cooperative Extension serve all people regardless of race, color, age, sex, religion, disability, or national origin.