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# Oregon Agricultural College

## EXTENSION DIVISION

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# Principles of Bread Making

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## BREAD.

Bread in some form is the principal article of diet for most of mankind. The products of corn, oats, rye, millet, wheat, chestnuts, bananas, rice, beans, and many other articles have been used by different nations as bread. To the English-speaking races bread means the food made from wheat-flour, leavened (made porous by the action of yeast) and baked.

The opinions concerning the desirable qualities of bread vary with the consumer, but in general the following qualities have been agreed upon:

### QUALITIES OF GOOD BREAD.

Bread should be in flavor sweet and nutty; the odor should be the same as the flavor; the texture should be soft and tender, but not inclined to crumble; the holes should be small and very numerous; the interior of the loaf should be thoroughly baked and the exterior should be of a golden-brown on all sides; the color of the crumb of the bread should be of a delicate, creamy white. To attain these qualities in bread, it is necessary that good yeast and good flour be used, that the materials be properly handled, and the product correctly baked.

### YEAST.

Yeast is a one-celled plant, so small that it can only be seen by the use of the microscope. When placed under favorable conditions—given warmth, moisture, air and food—it grows and multiplies rapidly. During growth a bud or small enlargement starts on one side of the cell; this grows until almost as large as the original yeast plant, when it separates from the other and becomes independent. Dry yeast, as pur-

chased, consists of dormant yeast plants together with other micro-organisms, many of these latter being injurious to the quality of the bread. The lactic acid bacteria often occur so numerously in bread as to cause a sour flavor. Whenever the yeast plants are weakened, either from long keeping or bad conditions, the acid-forming bacteria multiply and injure the bread.

Compressed yeast consists of living, active yeast-cells, together with sufficient starch to hold it in shape. When it can be obtained fresh it makes bread of the finest quality, but because the cells are alive and growing they will quickly if not planted in a suitable medium.

The first requisite for growth of yeast is food, which must consist of protein, mineral matter and sugar; the second requisite is water; the third is warmth, a temperature of 72 to 90 degrees F. being most advantageous; and the fourth is air. Flour and potatoes each contain the proper yeast foods. Yeast has the power to alter the starch of potato and flour to sugar before making use of it. As yeast grows in bread it discharges into the bread alcohol and carbon dioxide (the same gas that a human being discharges from the lungs). This carbon dioxide is the material that forms the bubbles in the dough which afterwards leave the holes in the bread. The carbon dioxide and alcohol are both driven off by the heat during baking.

In the following yeast recipe, potato and potato water, together with a small amount of sugar, furnish the food upon which the yeast plants grow and in which they multiply. The salt tends to reduce the growth of the acid-forming bacteria. When hops are used in yeast the tannin in the hops kills the bacteria and prevents sourness.

#### YEAST RECIPE.

Four medium-sized raw potatoes, pared;  
One quart of rapidly boiling water;

One-fourth cup of sugar;  
One tablespoon of salt;  
One cake of dry yeast.

While the water boils rapidly, grate the potatoes into the water, boil until clear as laundry starch. Stir sugar and salt in while it is hot, cool down to luke-warm, then add the yeast-cake, which has been soaked in a little warm water. Allow to ferment in a stone crock 24 hours, place in a two-quart Mason jar and set in a cool-dark place. This will keep about two weeks, and the last cup of this may be used instead of a dry yeast-cake in making a new supply.

## FLOUR.

Flour, which is the chief product in the grinding of wheat, is composed of carbohydrate, protein, and mineral water, with a small percentage of water. The protein of wheat is known as gluten, and is the constituent of flour which renders tenacious the dough made from it. The greater the percentage of protein, the greater this tenacity and the consequent resistance to the pressure of the gas formed by the yeast. Flour made from hard wheat (wheat which has a high percentage of gluten is called "hard") makes excellent bread, and the loaf from a given weight of this flour is larger than one made from the same weight of soft wheat flour (wheat of low gluten content. Good bread may be made from soft or hard wheat flour, but the methods required will be slightly different. Most of Oregon flours are from soft wheat or a blend of soft and hard wheat. The bread-making qualities of flour are injured if the wheat undergoes damage in the stack or if the flour is stored in a moldy or damp place before it is used.

## BREAD-MAKING.

The liquid used in bread may be milk or water, but in either case it should be scalded and cooled to kill any micro-organisms. All utensils used should be perfectly clean. The kneading should be with a light, swift movement, and be continued until the dough feels soft and velvety. No flour should be added at the time the loaves are shaped. Each loaf should be baked in a separate pan, with loaves far enough apart in the oven so that each may receive an equal amount of heat upon all portions of its exterior.

## FAULTS IN BREAD.

The common faults of bread are: Sourness, due to poor yeast, too high a temperature, or too long fermentation; moldiness, due to unclean utensils, moldy wheat, flour stored in a moldy place, or bread placed in a box or cloth that was moldy; uneven texture, due to poor kneading, coarse holes, due to poor kneading, too long fermentation, too cool an oven while baking, dough not stiff enough when made; burned or underbrowned crust or misshapen loaves, due to faulty heating of the oven.

## BREAD RECIPE.

Flour;  
One-fourth cup of sugar;  
One tablespoon of salt;  
One quart of scalded and cooled sweet milk;  
One-fourth cup of shortening;  
One cup of yeast.

Make into a sponge and allow to become thoroughly light; stir in the remainder of flour and work until perfectly smooth. The amount of flour will vary somewhat with the kind used. Allow to rise until more than twice the original bulk. Shape into

loaves with as little working as will permit of smoothness. Allow to rise again, and bake in oven at 360 to 400 degrees F. Cool right side up on wire rack. Keep in tin bread boxes. Do not wrap in cloth or paper. All bread should be baked in individual loaf pans.

Good bread may also be made by adding enough flour at the first to make a stiff dough, thus omitting the sponge entirely.

### SCORE-CARD FOR JUDGING BREAD.

<b>Baking—</b>	
Thoroughness .....	20
Color .....	12
(Shade 6, evenness 6)	
Shape .....	8
<b>Taste—</b>	
Sweetness .....	25
Flavor .....	15
<b>APPEARANCE OF CRUMB:</b>	
<b>Texture—</b>	
Quality .....	8
Fineness .....	4
Evenness .....	5
Color .....	3

**EXPLANATION OF THE ABOVE.**—The bread should be so completely baked that, when pressed, it immediately springs out upon release of pressure. The color should be golden-brown, top, sides and bottom. The bread should be baked in individual pans, size  $9 \times 4 \frac{1}{2} \times 2 \frac{3}{4}$  inches. The last measure is the depth. The loaf should be evenly raised in the pan, with no cracked, protruding or uneven crusts. There should be no trace of acidity in the taste, and the flavor should be rich and nutty. The bread when cut should have a soft, velvety texture, all harshness absent. It should slice smoothly, without crumbling. The holes should be numerous and small, and of uniform size. Occasional large holes are a serious fault. The color should be a slightly creamy white.

## **PARKERHOUSE ROLLS.**

One cup milk, scalded and cooled;  
One cake compressed yeast, or one-half  
cup of liquid yeast.;  
One-quarter cup luke-warm water;  
Two tablespoons butter;  
Two tablespoons sugar;  
One and one-half teaspoons salt;  
Flour to make as stiff as can be beaten.

Dissolve yeast in water. Melt butter.  
Combine all ingredients except flour. Add  
flour gradually, beating vigorously until  
no more flour can be beaten in. Cover and  
allow to rise until three times original  
bulk. Roll one-half inch thick. Cut,  
spread one-half with butter and fold over.  
Put in buttered tins to rise, placing one  
inch apart. Butter tops, bake when light  
in hot oven 15 to 20 minutes.

## **CINNAMON ROLLS.**

Roll Parkerhouse roll mixture one-half  
inch thick. Spread with melted butter and  
sprinkle liberally with mixture of five parts  
sugar and one part ground cinnamon. Roll  
as jelly roll and cut in three-fourth slices.  
Put closely in buttered pan, cut side up.  
Let rise and bake in moderate oven 35  
minutes.

## **HOT CROSS BUNS.**

One cup scalded milk;  
One-fourth cup sugar;  
Two tablespoons butter;  
One-half teaspoon salt;  
One-fourth to two yeast cakes;  
Three-fourths teaspoon cinnamon;  
Three cups flour;  
One egg;  
One-fourth cup raisins.

Make sponge as for Parkerhouse rolls.  
Add cinnamon, flour, and egg well beaten;

when thoroughly mixed, add raisins. Cover and let rise over night. In morning shape in form of biscuits, place in pan one inch apart. Let rise and bake 20 minutes. Before putting in pan make a form cross on top of each bun.

### ZWIEBACK MIXTURE.

One up milk;  
One-half cake yeast;  
One teaspoon salt;  
One-quarter cup sugar;  
One-quarter cup butter;  
Two eggs;

Mix all of the ingredients and make into a sponge. Let rise until very light. Add enough flour to make soft dough. Let rise again. Shape into small buns and when light bake in a moderate oven about 35 minutes.

When cold, slice and brown throughout in a moderate oven.