



Oklahoma 4-H Youth Development

# Food Science 4-H Exhibit Preparation

Level III  
12-14 years old

**Baked Goods  
Recipes**

2012

## Check It Out... Level III Food Science

There are 18 Lessons/Activities in the Level III Food Science Project manual. Each lesson will assist you in developing your knowledge and skills in this project area.

4-H members are encouraged to select lessons and work their way through each set. Your goal is to apply the information to your daily life - through meal planning, preparation and food selection.

### Lessons include:

- Using the My Plate/ Food Pyramid and a varied Diet
- Yeast Breads—Rising to the Occasion
- A Growing Knowledge—Cinnamon Rolls
- Sizing Up Squash
- Super Salads
- Simply Stir-Fry
- Can It Right! Canning Pickles
- Freezing: The Cold Facts
- Scrumptious Strawberries
- Fun with Fruit Salad
- Dairy-Making Sense of Our Senses
- Eggstra Protein
- Poultry Preparation
- A Souper Supper
- Roll Out the Cookies
- Healthy Eating Habits, Set for Life!
- Beef Fat Facts
- Final Project—Breakfast Bread Buffet



For what is the **Health** trained: *To resist disease ; To enjoy life; and To make for efficiency.*

### Purpose for Judging

"TO MAKE THE BEST BETTER" is the 4-H motto. How do we know what is best? How can we learn to make it better unless we learn standards and develop the ability to make sound decisions? Every experience, which helps us make wise decisions, enriches our lives. Good judgment is based on proper information and the ability to make wise decisions.

An time a 4-H member exhibits a "project" they are asking to have "what they learned" evaluated through the product being exhibited.

Project work requires practice, just like an athlete must practice

### Food Science Exhibits

- One-half loaf of any yeast bread (not a sweet dough) made by hand or in a bread machine
- Three (3) yeast cinnamon rolls (no icing)
- Three (3) rolled sugar-type cookies (no gingerbread recipes)

Recipes in this handout are from the food science manuals. 4-H'ers may use these recipes or any other that fits the exhibit requirements. Cakes must be made from scratch using shortening mixing method (no mixes). Bread machines may be used to mix and bake bread. Dough must be made from scratch, no mixes.

**Exhibit will be disqualified if specifications are not followed.**

### The Value of Exhibiting Project Work

- Teaches youth to appreciate high standards
- Teaches youth to observe closely
- Teaches youth to develop their reasoning ability
- Teaches youth to make sound and systematic decisions
- Teaches youth to improve their own work
- Teaches youth to develop the ability to concisely express thoughts

*Excerpt from:*

### Volunteer Development Series 4H•VOL•107 Judging—A Teaching Technique

In the production of any product there are standards and/or specific qualities to strive to attain or master. When a product is evaluated/judged, placing is based on the product which illustrates the best/greatest number of the "ideal" qualities.

#### Yeast Bread

- |           |           |
|-----------|-----------|
| 1. Shape  | 5. Crumb  |
| 2. Color  | 6. Slice  |
| 3. Crust  | 7. Flavor |
| 4. Volume |           |

#### Cookies

- Shape
- Crust
- Crumb
- Flavor

**4-H'ers may use any recipe that fits the exhibit requirements according to the age group listed in the current State Fair Catalog. Bread machines may be used to mix and bake a yeast bread exhibits, but the dough must be made from scratch - no mixes. Exhibits are being judged on the quality standards listed for the product.**

## Recipe Rolled Sugar Cookies

Lesson 15, "Roll Out the Cookies" in Level III Food Science provides excellent information on techniques necessary for the "ideal rolled cookies."

### **Ingredients Needed:**

- 3/4 cup sugar
- 3/4 cup margarine or unsalted butter
- 1 large egg
- 1 teaspoon lemon rind
- 1/4 teaspoon salt
- 2 cups all-purpose flour
- 1/2 teaspoon baking soda
- 1/2 teaspoon cream of tartar
- 1 teaspoon vanilla extract

Serving size and nutritional information located on page 6.



### **You be the Judge**

Evaluate your cookie—  
page 157 Food  
Science < Level III

- Preheat oven to 400°F. (205°C)
- Cream thoroughly with electric mixer the sugar, margarine, egg, lemon rind, salt and vanilla.
- Mix the flour, soda and cream of tartar together. Stir into the sugar — margarine mixture by hand.
- Shape dough into ball; wrap in plastic and chill.
- Place small amount of the chilled dough on a lightly floured board or pastry cloth. Use a floured rolling pin, roll gently until dough is 1/4 to 1/8 inch thick.
- Cut into shapes with floured cookie cutters. Save the trimmings at the end. Trimmings can be rolled together to make additional cookies.
- Place on greased cookie sheet leaving space so that cookies can spread.
- Bake at 400° F. (250° C.) for 5-9 minutes or until slightly golden. Cool on a wire rack. Yields approximately 18 cookies.

Source: Oklahoma 4-H Food Science, Level III, No. 187, August 1987

### **Quality Standards for Sugar Cookies**

**Size:** Uniform

**Shape:** Slightly mounded and circular

**Texture:** Tender and crisp

**Color:** Light golden color with slightly darker edges.

**Appearance:** Free from excess flour on bottom and edges.

**Flavor:** Pleasing; ingredients well blended.

**Scoring:** Excellent—Blue; Good—Red; and Needs to be Improved—White

Source: Sugar Cookies Judging Criteria Sheet No. 598, April 1986/2000

## **Causes of Failure**

### **Difficulty**

**Flavor bitter**

### **Reason Why**

Too much baking powder or soda  
Poor recipe/mixing

**Irregular shape & thickness** Dough not molded right/chilled enough

Thin, sharp knife not used for slicing  
Cutter not dipped in flour.

**Excessive spreading**

Dough too warm  
Dough dropped on hot baking sheet.  
Incorrect oven temperature

**Uneven brown oven**

Over baked or incorrectly placed in

**Tough/Soft**

Dark baking sheet or too large for oven  
Cut too thick  
Too much re-rolling  
Too much or too little flour or mixing

**Streaks**

Poor mixing techniques

**Read recipes and directions carefully before starting.**

**Look up terms and procedures you do not understand.**

## Recipe Rapid-mix Method Yeast Bread

Lesson 2, "Yeast Bread—Rising to the Occasion" in Level III Food Science provides excellent information on techniques necessary for working with yeast breads.

### **Ingredients Needed:**

- 5-5 1/2 cups flour ( up to 1/2 can be whole wheat)
- 1 package dry yeast (2 1/2 teaspoon.)
- 2/3 cup nonfat dry milk
- 2 teaspoon salt
- 1 tablespoon sugar
- 2 cups water (120-130° F)
- 2 tablespoon oil
- Oil or non-stick cooking spray to grease pans

Serving size and nutritional information located on page 6.



- Preheat oven to 400°F.
- In large bowl mix together 2 cups flour, yeast, dry milk, salt and sugar.
- Add water and stir well.
- Add oil and beat with mixer 3 minutes or with wooden spoon about 5 minutes.
- Gradually stir in enough remaining flour to make a soft dough.
- Gently knead on lightly-floured surface about 5-7 minutes.
- Cover dough with damp towel. Let rest 20 minutes.
- Shape into 2 loaves (see instructions in lesson 2). Place in well-greased loaf pans.
- Let rise until doubled in bulk. Cover dough with damp towel so skin doesn't form.
- Bake at 400° F for 35-40 minutes. The bread is done when it makes a hollow sound when tapped on the bottom and sides are firm and golden brown. Makes 2 loaves.

Source: Oklahoma 4-H Food Science, Level III, No. 187, August 1987

*Bread machines may be used to mix and bake a yeast bread exhibits, but the dough must be made from scratch - no mixes.*

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### **Quality Standards for Yeast Bread**

**Size:** Light in weight in proportion to size

**Shape:** Oblong, well-proportioned, evenly rounded top; tender, smooth, free from cracks and bulges; slight break and shred at edge of pan

**Crust:** Even, golden brown; slightly darker on top than sides and bottom; crisp and tender

**Texture:** Tender, springy crumb, elastic, not dry or doughy

**Color:** Even and characteristic of ingredients used; free from dark streaks; silken sheen in light

**Flavor:** Sweet, slightly nutty flavor and odor; blend of well-baked ingredients; free from of flavors such as yeasty, rancid, sour or musty

**Grain:** Fine cells (small holes) elongated from bottom to top of loaf; evenly distributed; thin cell walls.

**Scoring:** Excellent—Blue; Good—Red; and Needs to be Improved—White

Source: Montana 4-H Guide for Judges 1993, K. Astroth

## **Causes of Failure**

### **Difficulty**

#### **Crust Thick**

### **Reason Why**

Too much flour; insufficient rising, oven temperature too low

#### **Baked loaf crumbles easily**

Dough not well-mixed; too much flour added; rising place too warm; dough allowed to rise too long; oven temperature too low; weak flour

#### **Bread has sour taste**

Rising place too warm and dough rose too fast; dough rose too long before being baked

#### **Dough does not rise**

Too cool or hot water temperature used for dissolving yeast; dough too stiff; rising place too cool; expired yeast.

#### **Bread has dark streaks**

Uneven mixing or kneading; bowl greased too heavily; dough not covered during rising; flour on work surface

#### **Bread has holes**

Air not completely worked out of dough during shaping of loaves; dough rose too long before baking

#### **Bread is doughy on bottom**

Bread not removed from pans and allowed to cool on racks after baking; under baked

#### **Top of loaves cracked**

Cooled too rapidly, probably in a draft; dough too stiff; dough not well-mixed

### **Additional Trouble Shooting Tips in Lesson 2 Level III.**

## Recipe Cinnamon Rolls

Lesson 3, "A Growing Knowledge of Yeast—Cinnamon Rolls" in Level III Food Science provides excellent information on making cinnamon rolls.

### Sweet Dough Ingredients Needed:

3 1/2 - 4 cups bread flour  
1 package active dry yeast  
1 cup fat free milk  
1/4 cup sugar  
1/4 cup reduced-calorie margarine (in a tub)  
1/2 teaspoon salt  
2 large eggs  
Vegetable cooking spray

### Cinnamon Roll Filling:

3 tablespoon margarine  
2/3 cup brown sugar  
2 teaspoon cinnamon  
1/2 cup raisins, if desired  
1/2 cup nuts, if desired

Serving size and nutritional information located on page 6.



- Combine 2 cups of flour with yeast.
- Combine milk, sugar, margarine and salt in saucepan and heat over low heat until very warm (120-130°F). Add to flour mixture; add eggs. Beat at low speed for 30 seconds; scrape sides of bowl constantly.
- Beat 3 minutes at high speed, scraping sides constantly. Use a wooden spoon to mix in remaining flour until a soft dough forms (dough will pull away from sides of bowl).
- Turn onto "lightly" floured surface. Gently knead until smooth and elastic (about 5 minutes). Shape into a ball.
- Spray mixing bowl with vegetable cooking spray. Place dough in bowl and turn to coat with oil. Cover with clean damp towel and let rise in a warm place until doubled in bulk (45-60 minutes).
- Punch dough down. Cover; let rest 10 minutes.
- Spray two 9 x 1 1/2" inch round baking pans with vegetable cooking spray.
- Divide sweet dough in half. Roll each half into a 12 x 8 inch rectangle.
- In a small saucepan, melt 3 tablespoons margarine. Brush half of the margarine over each rectangle of dough.
- Combine the brown sugar and cinnamon (raisins and nuts, if desired). Sprinkle half of mixture on each rectangle. Remember that no nuts equals a lower fat content in the finished product.
- Roll up, starting from longest end. Pinch dough together to seal. Moistening the edge of the dough makes it easier to seal firmly.
- Cut into 1-inch slices. To cut into nice even pieces without smashing the roll, use a piece of string/dental floss. Slide the string under the roll, bring the ends up to the top, cross and pull.
- Cross ends, pull string tight to cut through roll. Place in greased pans. Cover; let rise till doubled (about 30 minutes).
- Bake in 375°F oven for 18-20 minutes. Cool slightly. If desired frost cinnamon rolls while warm.

**County and State Fair Exhibits can not be iced.**

Yields 24 Cinnamon Rolls

Source: Oklahoma 4-H Food Science, Level III, No. 187, August 1987

### Quality Standards for Cinnamon Rolls

**Size:** Uniform

**Shape:** Uniform, round, even thickness of bread spiral.

**Crust:** Thin, smooth, uniform golden brown, slightly darker on top than sides and bottom, tender.

**Texture:** Tender, springy crumb, moist.

**Color:** Even, free of dark streaks, characteristic of ingredients.

**Flavor:** Sweet, not overpowered by spices, uniform, not yeasty, rancid or sour.

**Grain:** Fine cells, evenly distributed, thin cell walls.

**Scoring:** Excellent—Blue; Good—Red; and Needs to be Improved—White



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**Look up terms and procedures you do not understand.**

<b>Class of cookie</b>	<b>Description</b>	<b>Examples</b>
<b>Drop</b>	Made from a soft dough and dropped by spoonfuls onto baking sheets	Chocolate chip cookies, oatmeal cookies, macarons
<b>Rolled</b>	Made from a stiff dough that is rolled out using a rolling pin and cut into shapes with a cookie cutter	Gingerbread men, some sugar cookies, any cookie made with a cookie cutter
<b>Molded, hand shaped</b>	A stiff dough is rolled between the hands to form a ball and/or shaped using a mold or other shape or tool (fork, cookie stamp, bottom of a glass)	Peanut butter cookies, snickerdoodles, almond crescents, some biscotti cookies
<b>Pressed</b>	A stiff dough is forced through a cookie press into decorative shapes.	Spritz, Spritzgebäck
<b>Refrigerator or icebox</b>	Made from stiff dough that is rolled into a log, chilled, sliced and baked.	Pinwheels, shortbread, some sugar cookies, some biscotti cookies
<b>No Bake</b>	Mixture may or may not be cooked on a range but these cookies are not baked in an oven.	Chocolate No Bake Cookies, Rice Krispies Treats
<b>Bar</b>	Dough or batter is baked in a cake or sheet pan and cut into bar shapes after cooling. Many varieties of drop cookie dough can be baked this way.	Brownies, chocolate chip bar cookies

## Yeast—What's the difference?

### Fresh Cake Yeast

When using fresh cake yeast (also known as compressed fresh yeast) for a bread recipe, the yeast should first be crumbled into a bowl or it can be broken up using a wooden spoon. Use the quantity of yeast specified in the recipe. Add the quantity of warm water specified in the bread recipe and stir until the yeast dissolves into a uniform paste. The bowl should be placed in a warm location for several minutes before the yeast mixture is added to the flour.

### Active Dry Yeast

Active dry yeast comes in a granular form and is usually available in small packages.

To prepare the yeast for bread making, pour some warm water (the quantity specified in the bread recipe) into a bowl. Add the specified quantity of active dry yeast to the water. The yeast granules will slowly sink. Place the bowl in a warm location for about 5 to 10 minutes. The liquid should begin to bubble and foam. Do not allow the yeast to sit too long before adding it to the flour or it will become a less effective leavening agent. Stir the liquid with a wooden spoon and add it to the flour.

### Quick-Rising Active Dry

#### Yeast

Like active dry yeast, quick-rising active dry yeast is also a granular product available in small packages.

It can be added directly to the flour and other ingredients without having to be activated in warm water first. Simply blend the specified quantity of yeast with the other dry ingredients in a large bowl.

The yeast will activate as soon as the liquid ingredients are added. When water is the only liquid used in the bread recipe, the temperature of the water can be warmer (usually 115° to 125°F) than the temperature of the water used to activate other types of yeast.

## Serving Size and Nutritional Information for all Recipes

Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on

### **Rolled Sugar Cookies—page 2**

18 Servings - Amount Per Serving

Calories 155.2

Total Fat 8.0 g

- Saturated Fat 1.0 g
- Polyunsaturated Fat 4.3 g
- Monounsaturated Fat 2.3 g

Cholesterol 10.3 mg

Sodium 173.6 mg

Potassium 36.7 mg

Total Carbohydrate 19.1 g

- Dietary Fiber 0.4 g
- Sugars 8.4 g

Protein 1.9 g

Vitamin A 7.1 %

Vitamin B-12 0.6 %

Vitamin B-6 0.6 %

Vitamin C 0.3 %

Vitamin D 0.6 %

Vitamin E 0.0 %

Calcium 0.6 %

Copper 1.0 %

Folate 6.7 %

Iron 3.8 %

Magnesium 0.8 %

Manganese 4.8 %

Niacin 4.1 %

Pantothenic Acid 0.7 %

Phosphorus 2.3 %

Riboflavin 4.9 %

Selenium 6.8 %

Thiamin 7.3 %

Zinc 0.9 %

### **Yeast Bread—page 3**

36 Servings - Amount Per Serving

Calories 85.3

Total Fat 1.1 g

- Saturated Fat 0.1 g
- Polyunsaturated Fat 0.3 g
- Monounsaturated Fat 0.5 g

Cholesterol 0.3 mg

Sodium 136.8 mg

Potassium 47.1 mg

Total Carbohydrate 15.9 g

- Dietary Fiber 0.6 g
- Sugars 0.9 g

Protein 2.7 g

Vitamin A 0.0 %

Vitamin B-12 0.0 %

Vitamin B-6 0.4 %

Vitamin C 0.0 %

Vitamin D 0.0 %

Vitamin E 0.9 %

Calcium 0.3 %

Copper 1.6 %

Folate 8.4 %

Iron 5.0 %

Magnesium 1.2 %

Manganese 7.3 %

Niacin 6.7 %

Pantothenic Acid 0.9 %

Phosphorus 2.0 %

Riboflavin 5.9 %

Selenium 10.4 %

Thiamin 10.6 %

Zinc 1.0 %

### **Cinnamon Rolls—page 4**

24 Servings - Amount Per Serving

Calories 157.9

Total Fat 4.5 g

- Saturated Fat 0.9 g
- Polyunsaturated Fat 0.9 g
- Monounsaturated Fat 2 g

Cholesterol 20.4 mg

Sodium 101.2 mg

Potassium 85.1 mg

Total Carbohydrate 28.2 g

- Dietary Fiber 1.0 g
- Sugars 12.8 g

Protein 3.5 g

Vitamin A 4.1 %

Vitamin B-12 0.0 %

Vitamin B-6 1.3 %

Vitamin C 0.4 %

Vitamin D 1.0 %

Vitamin E 1.0 %

Calcium 3.0 %

Copper 4.5 %

Folate 8.7 %

Iron 7.0 %

Magnesium 3.3 %

Manganese 12.1 %

Niacin 6.2 %

Pantothenic Acid 1.2 %

Phosphorus 4.8 %

Riboflavin 5.9 %

Selenium 9.1 %

Thiamin 10.3 %

Zinc 1.7 %