



# Evaluating 4-H Food and Nutrition Exhibits

The overall purpose of exhibits is to share what the 4-H'er learned based on exhibitor's goals. The following criteria should be used to evaluate exhibits in both conference and non-conference judging situations:

1. Accuracy of information included in the exhibit.
2. Quality of the product or practical application of the information learned.
3. Neatness and overall appearance of the exhibit.
4. Guidelines met (the exhibit should meet the specifications outlined in the fair list such as exhibit size, exhibitor's goal, recipe information, etc.).

## Judging Quality of Place Settings, Posters, and Displays

People often ask if exhibits with copyrighted characters such as "Snoopy" and "Garfield" will be accepted for State Fair food and nutrition exhibits. Copyright laws state that copyright material can be utilized for one-time use for educational purposes. The posters 4-H'ers develop for food and nutrition exhibits would be considered a one-time use. Therefore, it is acceptable to use these characters in food and nutrition exhibits. However, posters entered in the National 4-H Poster Art Exhibit cannot use copyright material because these entries might be reproduced.

## Tips for Judging Place Settings

Review the menu first to evaluate it for good nutrition, eye appeal, etc.

View the place setting and ask yourself these questions:

1. Are the items included in the place setting appropriate for the menu and the occasion?
2. Is there harmony of color, texture, and design?
3. Is there a predominate center of interest?

## Tips for Judging Posters

The purpose of a poster is to share information the 4-H'er has learned. View the poster from a distance as well as close up. Ask yourself these questions:

1. Does the poster attract and hold attention?
2. Does the poster have a brief catchy message (one theme)?
3. Is it easy to read and understand?
4. Does it encourage the viewer to do something such as drinking milk to have strong bones and teeth?
5. Does the display teach facts, show a process, and/or promote good nutrition?

For more information on posters, refer to "Score With Your Posters," which can be found in the Communication section of the *Evaluating 4-H Exhibits Notebook*.

Displays may include any combination of artwork, food products, and/or models or other objects. 4-H'ers may chose to exhibit a baked or preserved product in a display box or prepare some type of small display that does not include a food product. Remember, it is generally the product that should be evaluated.

## “Gluten-Free Myths, Truths, & Baked Goods” Webinar

How to evaluate products and informational posters as fair exhibits. The growing interest in gluten-free diets has created demand for learning how to accurately assess claims made about gluten-free foods and the need to know the quality standards for evaluating gluten-free products.

Ashley Moyna, ISU Dietetics & Culinary Science student, prepared this webinar as part of her ISU Honors Project. Presenting in cooperation with Dr. Ruth Litchfield, Associate Professor/Associate Chair, Department of Food Science and Human Nutrition, Ashley discussed common myths of gluten-free foods and diets, quality standards of gluten-free baked products and how they differ from baked goods made with traditional flours.

### Instructions for viewing the Food & Nutrition Judges Training webinar

1. View Webinar Part I – [“Truths & Myths”](#)
2. View Video – [“Science: A Closer Look at Gluten”](#)
3. View Webinar Part II – [“Baking”](#)

### Other Resources:

- [Bread](#) “cheat sheet”
- [Muffins](#) “cheat sheet”
- [Coconut Flour](#)

## Judging Quality of Baked Products

### Standards

Much of the information which follows is based on traditional standards that have been established as desirable for baked products. Not all products will fit these standards. For example, a loaf of French bread will have a chewy crust rather than a crisp tender crust. Or, a microwave cooked product may have a different crust quality than a conventionally baked product.

### Techniques

In general, all baked products are judged by:

- General appearance and external characteristics.
- Internal characteristics.
- Flavor (taste and aroma).

When you evaluate baked products, use your senses:

- **Look** at the outside appearance of products – color, shape, size.
- **Touch** the crust to determine external texture and moistness.
- **Cut or break** to observe grain and cell size. If it is bread, cake, or quick bread, cut a slice near the center; cut biscuits laterally; cut muffins vertically.
- **Listen** as you break off a piece to observe texture. **Look** for fluffiness. **Touch** for softness and lightness.
- **Smell** it for a pleasant characteristic aroma.
- **Taste** a few crumbs for flavor and mouth feel.

If much judging is done, eating unsalted crackers, apple slices, carrot sticks, or drinking water at room temperature between samples will help. Keep your taste buds in top form. Do not sip coffee, tea, or other beverages since they impart their own flavors and impair judgment.

## Terms Used in Judging

### General Appearance (shape, condition of crust, surface color, and volume)

#### Shape

- asymmetrical
- broken
- even
- flat
- irregular
- oval
- round
- symmetrical
- thick
- thin
- uneven

#### Condition of Top Crust

- dry
- greasy
- level
- peaked
- pebbled
- pocked
- rounded
- ruptured
- sticky
- sunken

#### Exterior Color

- black
- bright
- burned
- dark brown
- discolored
- dull
- golden brown
- gray
- light brown
- little browning
- normal
- pale
- rich
- spotted
- white
- yellow

#### Volume or Size (height, diameter, or circumference of product)

- average
- excellent
- good
- large
- medium
- poor
- small
- uniform

#### Lightness (light in weight for size)

- compact
- dense
- heavy
- flat
- fluffy
- well aerated

### Interior of Product

#### Texture (grain—size of air cell and thickness of cell wall make up the grain of the product)

- coarse
- fine
- flaky
- foamy
- grainy
- harsh
- lacy
- mealy
- rough
- velvety

#### Color (appropriate for product, pleasing to the eye)

- bright
- creamy
- discolored
- deep chocolate
- dull
- normal
- off-colored
- pale
- reddish brown
- golden brown
- gray
- greenish
- lustrous
- mottled
- rich
- snowy white
- speckled

#### Moistness (degree of moisture within the crumb)

- dry
- gummy
- moist
- soggy
- wet

#### Tenderness (ease with which product can be cut, broken, pulled apart)

- chewy
- elastic
- hard
- harsh
- rubbery
- soft
- tender
- tough

### Flavor (combination of taste and aroma)

- astringent
- bitter
- bland
- brisk
- burned
- buttery
- delicate
- egg
- flat
- floury
- mellow
- nut-like
- rancid
- raw starch
- rich
- salty
- scorched
- soapy
- sour
- stale
- strong
- unbalanced
- well-balanced
- yeasty

### Mouth feel or consistency (degree of firmness, density, viscosity, fluidity, plasticity)

- brittle
- crisp
- crumbly
- crystalline
- curdled
- firm
- frothy
- gelatinous
- grainy
- gummy
- hard
- liquid
- mealy
- pasty
- rubbery
- runny
- syrupy
- slimy
- soft
- soggy
- solid
- stiff
- tender
- thin
- tough

## Biscuits

**Rolled biscuits:** made from lightly kneaded dough. Rolled on a lightly floured board after kneading and cut into shape.

**Dropped biscuits:** made from same basic ingredients as rolled biscuits, but proportion of liquid is higher.

### Standard Characteristics

**Appearance** – pale golden top crust; white crumb; uniform size; free of excess flour. Rolled biscuits should be of even height with straight sides and fairly smooth top. Drop biscuits should have slightly rough top surface with sloping sides.

**Texture** – Rolled biscuits will have small uniform gas holes; relatively thin cell walls; crumb will peel off in layers. Dropped biscuits will have less uniform thicker and larger cell walls than rolled biscuits.

**Tenderness** – crisp, tender outer crust; light and moist; tender.

**Flavor** – bland; no bitterness or rancidity.

### Problems

Not flaky

Tough

Pale crust

Misshapen, uneven

Uneven browning

Flat, heavy

Coarse, uneven cells

### Causes

Not enough shortening, shortening under or overmixed with flour, underkneaded.

Lack of fat, handled more than necessary, too much liquid or flour.

Baking temperature too low, underbaked, flour on surface of biscuit.

Cutter twisted during shaping, dough not uniform in thickness.

Uneven shape.

Not enough leavening, underbaked, too much flour or liquid, improperly mixed.

Too much leavening, underbaked, ingredients inaccurately

	measured, undermixed.
Harsh, dry crumb	Dough too stiff, overbaked.
Bottom of crust too dark	Baked on darkened pan, oven not operating properly, failure to reverse pans if two racks are being used.
Hard crust	Too close to heating element in oven, baked too long, too high a temperature.
Crumbly, oily	Too much fat, substituted oil for fat.
Yellow specks	Uneven distribution of soda or baking powder.
Floury surface	Too much flour used with kneading or rolling.
Low volume	Improper manipulation, not enough leavening, ingredients inaccurately measured, wrong time and temperature.
Doughy	Underbaked.
Bitter or soapy	Too much leavening, ingredients not blended thoroughly, used soda by mistake.
Rancid	Poor quality shortening.

### **Quick Loaf Breads**

Quick breads are fast and easy to make. They can be made by the muffin method or by the cake method and baked in a variety of different shapes. Cracks are typical of many quick breads and do not necessarily indicate a poor product. However, cracks can be reduced, if desired by: baking at a moderate temperature (350°F); or baking at 375° to 400°F but allowing to stand at room temperature 20 to 30 minutes before baking; or placing a foil tent over the loaf during the first half of the baking period.

#### Standard Characteristics

**Appearance** – even contour; rounded top; may have a center crack; evenly browned top and crust; uniform crumb color; well distributed nuts and fruit.

**Texture** – relatively fine crumb; uniform grain; free of large tunnels; moist; not mealy or crumbly.

**Tenderness** – tender crust; delicate crumb but does not crumble.

**Flavor** – pleasant and characteristic of variety prepared.

#### Problems

Low volume

Crumbly, dry

Compact, heavy

Coarse, textured,  
irregular grain, tunnels

Tough

Peaked

Heavily crusted

Soggy

Flat flavor

#### Causes

Inaccurate measuring techniques, too little leavening, too much liquid or flour, insufficiently mixed.

Overbaked, too little liquid or fat, too much flour.

Underbaked or low temperature, wrong type of flour, too much flour.

Too little fat or sugar, overmixed.

Too much flour, overmixed.

Too much batter in pan, overmixed.

Too close to heating element of oven, baked too long, baking pan temperatures too high.

Wrapped while warm, underbaked, too

Too little salt.

## Muffins

Because muffins come in many varieties, they will have different characteristics. Sweet cake-like muffins, for example, may have a cupcake-like top.

### Standard Characteristics

**Appearance** – rough pebbled top; golden brown top crust; even contour; slightly rounded top; no peaks.

**Texture** – fairly large air cells; uniformly distributed; free of long slender tunnels; medium thick cell walls.

**Tenderness** – little resistance when chewed.

**Flavor** – bland or slightly sweet.

### Problems

Pale

Unevenly browned

Too brown

Peaks

Tough, elastic

Compact

Irregular grain, tunnels

Smooth crust

Hard crust

Harsh, dry crumb

Rough surface, sharp edges

Waxy, shiny

Flat flavor

Gray interior

Yellow spots

Cracked

### Causes

Too little batter in muffin cup, overmixed, baking temperature too low.

Baking temperature too high, oven does not heat uniformly, pans filled too full, wrong proportion of ingredients (too much baking powder or sugar).

Incorrect time and temperature, too much sugar.

Pans filled too full, overmixed, insufficient leavening, batter too stiff, baking temperature too high, dropped from spoon held too high above the pan.

Too much flour, too little fat or sugar, overmixed.

Wrong time and temperature, improperly mixed, insufficient leavening, too much flour or liquid.

Overmixed, too much liquid, inaccurately measured, too little fat or sugar.

Overmixed.

Baked too long, baking temperature too high, too close to heating element in oven.

Batter too stiff, too much flour, overbaked.

Undermixed, too much flour.

Egg and milk insufficiently mixed.

Too little salt.

Too much leavening.

Ingredients insufficiently blended.

Wrong size pan, too high baking temperature.

## Yeast Breads and Rolls

Characteristics of yeast breads and rolls will vary a great deal depending on the ingredients and proportions that are used. Lean dough used in making a loaf of bread will produce a different product from rich sweet dough containing more eggs, sugar, and fat. Whole wheat breads and breads made with other flours may be heavier. When a no-knead or batter bread is made, the thin batter is mixed quickly and thoroughly without kneading. The batter is left in the mixing bowl for rising or placed directly in pans. Batter breads usually have a more open grain and uneven surface than kneaded bread.

### Standard Characteristics

**Appearance** – golden brown; good volume; symmetrical; smooth rounded top surface; uniform color; free of flour streaks; shredding along one side.

**Texture** – even moderately fine grain; porous texture; free of large air pockets; light for weight; thin, even tender crust.

**Tenderness** – moist, silky crumb; tender but elastic crumb.

**Flavor** – pleasing, well blended; wheaty, nutlike; free of sour or yeasty taste.

### Problems

### Causes

Uneven shape

Dough improperly shaped, crowded oven, too much dough for pan, insufficiently proofed.

Heavy, poor volume

Low-grade flour, insufficiently proofed, too cool while rising, underkneaded, yeast killed, collapsed because over proofing weakened the gluten, poor distribution of ingredients.

Crackled crust

Insufficiently fermented, cooled too rapidly.

Bulged, cracked crust

Dough too stiff, uneven heat during baking, insufficiently proofed.

Thick crust

Baked too slowly.

Tough crust

Insufficiently proofed, risen dough handled too much.

Pale crust

Baking temperature too low, underbaked, too much salt, dough became dry during rising, too little sugar.

Dark, dull crumb

Under or overproofed, wrong temperature while rising, baking temperature too low, old or stale yeast.

Tough crumb

Too much salt—retards fermentation.

Streaked loaf

Poorly mixed, addition of flour during molding, surface of dough became dry before shaping.

Crumbly loaf

Flour has poor gluten-forming properties, fermented too long or at too high a temperature, underkneaded, not enough flour, baking temperature too low.

Coarse-grained

Inferior yeast, salt omitted, flour has poor gluten-forming properties, fermented too long or at too high a temperature, underkneaded, not enough flour, baking temperature too low.

Yeasty, sour or bitey flavor

Poor yeast or flour, fermented too long, too high temperature while rising, too little sugar, baked too slowly or incompletely.

No break and shred

Dough not rolled and shaped properly before being placed in pan.

### **Shortened Cakes**

Leavened by baking powder and/or soda and acid as well as by steam and air. Contains solid or liquid shortening; heavier than foam cakes.

### Standard Characteristics

**Appearance** – rounded top, free of cracks; uniform crumb color; thin crust; high volume.

**Texture** – soft, velvety crumb; small air cells with thin walls, even grain; free of tunnels; moist but not sticky; light but not crumbly.

**Tenderness** – breaks apart easily; seems to melt in the mouth.

**Flavor** – delicate, sweet, well-blended.

<u>Problems</u>	<u>Causes</u>
Cracks on top	Baking temperatures too high at beginning of baking period, batter too stiff, pan too narrow or deep.
Peak in center	Batter too stiff because of too much flour, baking temperature too high at beginning of baking period, overmixed after addition of flour.
Fallen center	Not thoroughly mixed after flour was added, too much fat, sugar, or leavening, baking temperature too low, cake was moved during baking, pan too small for amount of batter, underbaked, not enough or too much liquid.
Tough crust or crumb	Too little fat or sugar, too much flour or egg, overmixed after addition of flour, flour too high in protein.
Sticky crust and noticeably shrunken	Too much sugar, damp flour, insufficiently baked, incorrectly frozen and thawed.
Sugary crust	Too much sugar or leavening, ingredients not blended thoroughly.
Soggy	Wrapped before completely cooled, underbaked, too much liquid or ingredients with a high water content, i.e., fruit, pumpkin, applesauce.
Bitter taste	Too much baking powder or baking soda.
Unpleasant taste	Poor quality eggs or shortening.
Heavy, low volume	Poor quality shortening or shortening with no emulsifier, not enough leavening so gas was lost before baking, overmixed so air incorporated during creaming was lost, too much fat, sugar, liquid, or flour, not enough air incorporated during creaming, insufficiently baked, pan too small or large for amount of batter, baking temperature too low.
Overlight, crumbly, coarse textured	Too much leavening, sugar, or shortening, baking temperature too low, fat and sugar insufficiently creamed, undermixed so ingredients were not blended thoroughly, oil used instead of solid shortening.
Dry, tough	Not enough fat, liquid, or sugar, egg whites overbeaten, overmixed after addition of flour, too much flour, egg, or leavening, substitution of cocoa for chocolate with no increase in fat.
Dull color	Poor quality ingredients.
Tunnels and occasional large holes	Batter overbeaten, uneven distribution of leavening agent, not enough fat or sugar, baking temperature too high, failure to expel air when batter is placed in pan, too much egg.
Pale color	Shiny pan used, too much batter for the pan.
Sunken	Too little liquid, too much sugar, shortening, or leavening, underbaked.
Not symmetrical	Oven not level, pan not centered in oven, temperature not even throughout the oven, batter not distributed evenly in pan, batter cut through with knife to release air pockets.
Gelatinous layer at bottom of cake	Ingredients insufficiently blended.

## **Unshortened or Foam Cakes**

Contain little or no added fat. Contain a high proportion of eggs or egg whites. Leavened by steam and air.

### Standard Characteristics

**Appearance** – thin, golden crust; symmetrical; good volume for weight; rough, slightly cracked top.

**Texture** – light and airy; fine even oval shaped cells with thin walls; sugary, slightly sticky crust; moist.

**Tenderness** – delicate crumb which easily breaks; soft crumb and crust.

**Flavor** – pleasant, well-blended, not eggy; sweet, fresh, delicate vanilla or almond.

### Problems

Thick, hard crust  
Sticky crust

Tough crumb  
Coarse crumb

Dark color

Dry

Heavy

Shrunken

Uneven appearance in  
texture

### Causes

Baking temperature too high initially, baked too long.

Too much sugar, ingredients not blended thoroughly, damp flour, insufficiently baked, humid weather.

Baking temperature too high, overmixed, baked too long.

Underbeaten egg, undermixed, baking temperature too high, too much sugar.

Inferior flour, not enough cream of tartar, wrong proportions—too much sugar.

Egg whites overbeaten, too much flour, too little sugar, overbaked, baking temperature too low.

Air lost during mixing, eggs not beaten to optimum volume, cream of tartar omitted.

Baking temperature too low, too little cream of tartar, insufficiently baked, overbeaten egg whites.

Ingredients not thoroughly blended.

## **Cookies**

**Rolled cookies:** made from rather stiff dough; rolled on lightly floured board to desired thickness and cut into desired shapes.

**Dropped cookies:** made from soft dough that is dropped from a spoon onto a cookie sheet.

**Refrigerator cookies:** made from a rich dough and chilled before shaping into balls or sliced from a roll.

**Press cookies:** made from a rich, stiff dough extruded from a decorative die.

**Bar cookies:** made from a stiff batter and baked in a shallow pan; may be cake-like or compact and chewy.

### Standard Characteristics

**Appearance** – uniform shape and color; even contour.

**Texture** – characteristic of type; soft, crisp, chewy.

**Tenderness** – not hard; breaks apart easily.

**Flavor** – well-blended; free of strong, unpleasant flavors.

<u>Problems</u>	<u>Causes</u>
Flour streaked	Too much flour used during rolling, incorrect proportion of ingredients, improper measuring techniques, poorly mixed.
Dry or crumbly	Wrong proportion of ingredients, incorrectly measured, poor mixing techniques, not enough liquid, overbaked.
Bottom crust too dark or uneven brown	Cookie sheet not centered in oven, dark cookie sheet used.
Top crust too dark	Baking temperature too high, overbaked.
Excessive spread, loss of shape	Cookies placed too close together on cookie sheet, dough too soft (too much liquid), dough placed on hot baking sheet.
Doughy, raw flavor	Underbaked, dough too stiff.
Off flavor	Rancid shortening, nuts or coconut, poor quality ingredients, too much baking powder, improper storage which caused cookies to become stale or to pick up other odors and flavors.
Sticky	Too much sugar.
Hard	Overbaked, flour too high in protein.
Tough	Overhandled, too little fat or sugar.
Irregular size and shape	Dough improperly handled when placed on cookie sheet.

### **Pastry**

Pastry is usually made from fat, flour, salt, and water. Sometimes additional ingredients such as egg, sugar, or other liquids are added or substituted for traditional ingredients.

#### Standard Characteristics

**Appearance** – rough, blistered surface with no large air bubbles; golden brown edges; uniform thickness; attractively shaped edge; not shrunken.

**Texture** – crisp and flaky.

**Tenderness** – breaks easily with fork, but does not fall apart.

**Flavor** – bland, no trace of burned, rancid, or raw flavor.

<u>Problems</u>	<u>Causes</u>
Lack of tenderness	Insufficient fat, protein content of flour too high, i.e., bread flour, fat not divided finely, too much water, dough overhandled during mixing and/or rolling, too much flour used when pastry was rolled.
Lack of flakiness (mealy or crumbly)	Too much fat, protein content of flour too low, i.e., cake flour, fat divided too finely, not enough water, self-rising flour used, undermixed, oil used instead of solid fat.
Pale, dull color	Too little fat, underbaked, too much water, too much flour on pastry board, baking temperature too low, rolled too thick.
Shrunken	Overhandled, pastry stretched when placed in pan, dough not rolled to uniform thickness, unbalanced recipes.
Burned	Overbaked.

### Problems

Smooth surface, not blistered

Uneven edge

Large air bubbles

Soggy lower crust

Rancid

### Causes

Overhandled, too much flour used during rolling.

Crust not rolled in even circle, edges not carefully shaped.

Pastry not pricked before baking, pan too small for amount of dough which caused pastry to buckle.

Filling too moist, cooked filling too hot when added, crust torn or broken which caused filling to run underneath the crust, shiny pie pan used which caused crust to bake too slowly, pie pan placed on baking or aluminum foil which interfered with heat transfer, baking temperature too low or time too short.

Poor quality shortening.

### **Judging Quality of Preserved Foods**

A variety of preserved foods may be displayed at achievement shows and fairs—fruits, vegetables, sweet spreads, pickles, and meats and poultry.

### General Standards

Procedures: current recommended procedures should be followed and indicated on the exhibit. This information is in current USDA and Extension publications. These are available in the county Extension Office.