A BAKER’S PANTRY
OF RESOURCES
lab thirteen
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Lab 13

Introduction: A Baker’s Dozen Labs are an introduction to baking and its multiple sciences. Lab 13 is devoted to offering the best at-your-fingertips place to go for more...more baking ingredient knowledge, food history, nutrition, ingredient and product guidance, techniques, baking education and on-line resources.

Become a pro at using available resources to make the investment in quality ingredients and baking time count for health and wellness of both planet and people.

Outcomes:
1. Identify reliable sources of baking ingredient and product handling, preparation and storage information.
2. Choose a baking resource to read, review and relate information to others to build consumer food handling skills.
3. Apply food handling and storage guidelines to the products prepared in labs, at work and at home.
4. Read and evaluate the dates on baking ingredients and products in the lab or at home.
5. Determine a method to manage ingredients in the freezer and pantry with First In First Out (FIFO) principals.
6. Select and apply storage methods that prevent rancidity, mold, freezer burn or staleness in baking ingredients and baked products.

Terms and Techniques to Know

Baker Terms: Look these terms up in the Glossary and know their meaning.

Danger zone
Dry ingredients
FIFO
Freezer burn
Humidity
Pantry
Mold
Rancid
Stale

For Teacher:
- Review package label date terminology (see text box) and Food Marketing Institute web-site for resources, www.fmi.org/consumer/
- Copy Keeping Food Safe information, baking ingredient and product storage guidelines, and Resources and References for student binders.
- Make or bring examples of bread that is “freezer burned,” “stale,” “moldy,” and “rancid” (nuts or oil).
- Identify with the students how to choose the correct storage method, location and length of time for baking ingredients and baked products.
- Schedule a visit to a food service kitchen, OR have a school food service manager come to tell students what they do to apply FIFO and good food storage/handling in a kitchen.
• Provide examples of where to store cleaning products away from food ingredients.
• Demonstrate how to cool, wrap and date foods for the freezer.
• Show how to check the temperature of the freezer and refrigerator.

Assign Students to:
• Study the Label Date terms, Keeping Food Safe, and handling and storage guidelines.
• Select a baking resource web-site and book (both) to review and report on for the class.

Take 10 Skill Drill
1. Select 10 packaged baking ingredients and mixes and determine their freshness based on the label information, sight, and smell. State how each should be stored.
2. Make a list of items that could be used to apply “FIFO” and reduce food waste or spoilage. (A: Keep in kitchen freezer wrap/foil; freezer weight plastic bags; standard weight plastic bags; permanent marker to write dates.)
3. Practice being a kitchen inspector. List three to five steps to take to start managing ingredients and products better. (A: Clean food cupboards, place older items to front; clean refrigerator and reorganize for better circulation; place a thermometer in the fridge to check temperature; date items; group items used in similar food preparations; find place for cleaning supplies separate from food.)
5. Add “use-by” dates to baked products in the freezer based on the storage guide included in this lab.

Food Label Dates
“Closed” or “coded” dating might appear on shelf-stable products such as cans and boxes of food. Each food manufacturer has their own code.
“Sell by date” How long the food can be displayed for sale, allowing a reasonable amount of time after the purchase in which the product can be used. Consumers should always purchase food before the “sell by date” expires.

“Best if used by date” Cereals and dry packaged foods are not at their best quality after this date, but can still be used safely for a short period of time thereafter.

“Expiration” or “use by date” Foods such as unbaked breads should not be purchased or consumed after the use-by or expiration date. The freshness date is located on the food package and serves as an indicator of product quality.

www.ext.vt.edu

Storage Guidelines for Baked Goods and Ingredients

Every day landfills receive food and ingredients that were simply poorly handled after purchase, preparation or storing. The environmental costs in wasted energy used to produce and transport these never-to-be-enjoyed ingredients or foods is significant. In addition, the monetary costs are passed on to consumers at the checkout lane.

Pantry Storage: Most dry baking ingredients and mixes can be stored at room temperature using these guidelines:
• Look for and apply the package dates. Replace ingredients with fresh for best results as needed. (See Food Label Dates.)
• Read the package label for the company’s storage guidelines too.

In general, store dry ingredients:
• sealed or tightly covered.
• in a clean, dry (less than 60% humidity) place, away
from light.
• in a cool (less than 85° F., best at 50° to 70° F.)
cabinet or shelf.
• away from the stove or refrigerator’s exhaust.
• off the floor and on a shelf or in a cabinet.
• separated from cleaning or non-food supplies.
• **whole** grains, meal, flour, wheat germ or cereals and
vegetable oil/shortening could be stored away from
heat at room temperature if they will be used within
a month. If they are kept longer, wrap and refrigerate
or freeze.

### Refrigerator: Temperature—34° to 40° F.
(above freezing, under 40° F.)
• Refrigerate baked goods that contain perishable
fillings.
• Do not refrigerate yeast breads and rolls (See
Handling Bread and Rolls).
• Butter, margarine and shortening—store in coldest
part of refrigerator when storing unopened package.
Store small amount in butter compartment for
immediate use.
• Eggs should be stored in their original carton to keep
freshest.

### Freezer: Freeze food at 0° F. or below.
• Avoid over-loading or stacking foods to freeze.
• Freeze as soon after baking and cooling as possible.
For best quality, wrap when cooled (internal
temperature—78° to 90° F.), in two thicknesses of an
airtight, moisture and vapor-proof material to avoid
air and moisture forming on surface of food (freezer
burn results). Ex: Foil, plastic wrap, plastic bags,
airtight containers.
• During freezing, the water in food freezes and the
resulting ice crystals do affect the texture of foods.
• The package should not be more than about
4-inches thick for quick freezing.
• In the freezer, leave space between packages so air
can circulate around them. Then, when the food is
frozen, stack or move the foods closer together.
• While a food will remain safe indefinitely at 0° F.,
quality declines over time. In general, plan to use
frozen baked goods in three months or less.

### Storage-At-A-Glance
Using the best storage method, for best quality, use by:

- **Baked goods**: Frozen; 0-3 months
- **Baking powder**: Sealed, cool, dry place; 1 year
- **Baking soda**: Cool, dry place, closed; 1 year
- **Butter**: One week past package date in coldest
  refrigeration
- **Cheese**: 35-40° F. – package date
- **Chocolate**: Sealed, cool, dry place, 60°-70° F. –
  18 months
- **Cocoa**: Cool, dark, dry place, sealed – indefinitely
- **Corn starch**: 18 months
- **Corn syrup**: Sealed – up to 3 years
- **Eggs**: In carton, under 40° F. – 0 to 3-5 weeks from
  purchase or sell by date
- **Enriched flour/meal**: Sealed, room temperature –
  6-8 months
- **Mixes**:
  - Cool, dry place – 9 months or use-by date
  - Tightly closed, cool, dark, dry place
- **Nuts, seeds**:
  - Unshelled, refrigerated – 8 months;
    shelled refrigerated – 4 months; frozen – 8 months
- **Oats**: Room temperature – 6 months
- **Raisins**:
  - Pantry shelf, sealed – 6 months;
    conditioned, sealed, refrigerated – 3-6 months
- **Spices**:
  - Cool, dark place, sealed-whole – 1 year;
    ground – 6 months; freeze for longer shelf life
- **Sugars**:
  - Sealed, brown – 4 months; confectioners –
    18 months; granulated – 2 years
- **Vegetable oil**: Opened – 1-3 months;
  sealed – 6 months
- **Whole grain flour and meal**:
  - Room temperature –
    under one month; frozen, sealed in plastic – one
    1 year or more
- **Yeast**: Sealed, coldest refrigeration or freezer –
  use package expiration date

Storage information: North Dakota State U. Extension
Publication #579.
# Bakers Tips

- Bulk (100 bags), large-sized food plastic bags and containers are available at www.kingarthurflour.com
- Thawing the ice crystals in the bag or container with the baked goods should not be shaken out, but allowed to reabsorb into the product. These same types of foods thaw rapidly and are best thawed on the counter.

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# Frozen Baked Goods Guide

Baked goods such as bread, rolls, cakes, cookies, and pie crusts are low in moisture and freeze well with little change in their texture. Here are some general use-by guidelines:

<table>
<thead>
<tr>
<th>Baked Product</th>
<th>Stored at 0° F., use in</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unbaked bread or rolls</td>
<td>1 month</td>
</tr>
<tr>
<td>Par-baked pizza crust or rolls</td>
<td>2 months</td>
</tr>
<tr>
<td>Baked yeast breads</td>
<td>2 to 3 months</td>
</tr>
<tr>
<td>Baked quick breads</td>
<td>2 months</td>
</tr>
<tr>
<td>Baked muffins</td>
<td>6 to 12 months</td>
</tr>
<tr>
<td>Waffles, pancakes</td>
<td>1 month</td>
</tr>
<tr>
<td>Cookie dough</td>
<td>3 months</td>
</tr>
<tr>
<td>Baked cookies</td>
<td>6 to 12 months</td>
</tr>
<tr>
<td>Angel cakes</td>
<td>6 to 12 months</td>
</tr>
<tr>
<td>Unfrosted baked cakes</td>
<td>2 to 4 months</td>
</tr>
<tr>
<td>Frosted baked cakes</td>
<td>1 month</td>
</tr>
<tr>
<td>Cake batter</td>
<td>1 month (use of double-acting baking powder recommended)</td>
</tr>
<tr>
<td>Baked fruit pies/tarts</td>
<td>6 to 8 months</td>
</tr>
<tr>
<td>Unbaked fruit pies/tarts</td>
<td>2 to 4 months</td>
</tr>
<tr>
<td>Unbaked freezer pie shell</td>
<td>2 months</td>
</tr>
</tbody>
</table>

Resources and References:

For Teacher: The following textbook baking resources are standards in teaching baking and have served as references in preparing the labs.


Baking Help Lines and Blogs:

**Argo Corn Starch:** P: 1-866-373-2300

**Bob’s Red Mill:** P: 1-800-349-2173; Blog www.bobsredmill.com/blog

**C&H Sugar:** Call or write us: C&H Sugar Company, Inc., Consumer Affairs 830 Loring Avenue, Crockett, CA 94525, P: 1-800-773-1803 and http://www.chsugar.com/Consumer/contact.php

**Cabot Cheese:** P: 1-888-792-2268

**Clabber Girl Baking Powder Baker's Blog:** www.clabbergirl.com/blog/

**Domino Sugar:** P: 1-800-729-4840 and www.dominosugar.com/contact-us

**Dromedary Cake Mixes:** P: 1-800-247-5251 (9 a.m. to 4 p.m., weekdays)

**Fleischmann’s Yeast:** P: 1-800-777-4959

**California Raisin Marketing Board:** Words of Wisdom blog. www.loveyourraisins.com

**Gold Medal Flour:** Real Baking with Rose Blog. www.realbakingwithrose.com/ Please call us at P: 1-800-446-1898 (7:30 a.m. to 5:30 p.m. CT, weekdays) www.ScratchBakersClub.com

**Grain Talk Blog.** www.wheatfoods.org

**Great American Bake Sales. Help end childhood hunger.** www.gabs.strength.org

**House-Autry Mills:** Ask Chef Pat. www.house-autry.com/chefs-corner or call P: 1-800-849-0802 (8 a.m. to 6 p.m. ET, weekdays)

**Hodgson Mill:** P: 1-800-347-0105, Email: CustomerService@HodgsonMill.com

**Jiffy Baking Mix:** P: 1-800-727-2460

**Kansas Wheat Commission:** P: 1-866-759-4328 and www.kswheat.com


**Land O’ Lakes:** Blog: www.landolakes.com/blog/ OR P: 1-800-328-4155

**Martha White Foods:** P: 1-800-663-6317 (8 a.m. to 6 p.m., CST)

**Pillsbury Consumer Relations:** P: 1-800-767-4466

**Red Star and LeSaffre Yeast:** P: 1-800-445-4746 (8 a.m. to 4 p.m. CST, weekdays), Email: Carol.Stevens@lsaf.com

**Sokol Company Solo® Pastry and Cake Fillings and Marshmallow Crème:** P: 1-800-EAT-SOLO (1-800-328-7656) or Email: info@solofoods.com
Baking Ingredients, Products and Equipment Web-sites:

Argo Corn Starch – www.argostarch.com
Bob’s Red Mill Natural Foods – www.bobsredmill.com
C&H Sugar – www.chsugar.com
Cabot Cheese – www.cabotcheese.coop
California Raisin Marketing Board – www.loveyourraisins.com/baking
Cereal Foods Processors, Inc. – www.cerealfood.com-Wall-Rogalsky (WR Flour) Flour
Chelsea Milling Company – www.jiffymix.com
Clabber Girl – www.clabbergirl.com
Colorado Wheat – www.coloradowheat.org
Colorado Wheat Administrative Committee – www.coloradowheat.org
Domino Sugar – www.dominosugar.com
Dromedary Cake Mixes – www.dromedarycakemix.com
Farmers Direct Foods, Inc. – Hard white wheat berries, whole white wheat flour, bran, bulgur, mixes.
www.farmerdirectfoods.com
Fleischmann’s Yeast – www.breadworld.com
Gold Medal Flour – www.bettycrocker.com
Great American Bake Sales – www.gabs.strength.org
Home Baking Association – www.homebaking.org
Hopkinsville Milling Company – www.sunflourflour.com
Kansas Wheat Commission – www.kswheat.com
Land O’Lakes – www.landolakes.com
Lesaffre Yeast Corporation/Red Star Yeast – www.redstaryeast.com
Martha White Foods – www.marthawhite.com
Rabbit Creek Gourmet Mixes – www.rabbitcreekgourmet.com
Shawnee Milling Company – www.shawneemilling.com
Sokol and Company Solo® Pastry and Cake Fillings and Marshmallow Créme Website – www.solofoods.com
South Dakota Wheat Commission – www.sdwalley2.org
Stafford County Flour Mill – www.staffordcountyflourmills.com
Stone-Buhr Flour Company – www.stone-buhr.com
The Sugar Association – www.sugar.org
Ultra-grain® Flour, Eagle Mills – www.ultragrain.com

For Students and Teachers: The following baking books enhance baking ingredients and product knowledge, food history, and practice. Many are available in libraries. They will be helpful in researching Student DIY Baking Topic reports throughout the labs.

Baking, Food History and Science:

A Baker’s Dozen Labs. Sharon Davis with Charlene Patton, Cindy Falk, Betty Kandt and Connie Nieman. Home Baking Association. Thirteen ingredient labs each with baking science, critical thinking, computer labs, three experience levels of baking labs, local service connections, resource section, appendix and full baking glossary.
www.homebaking.org
Agave Nectar: How-to-use this new natural sweetener in baking. www.chsugar.com and www.dominosugar.com

Bakers Dozen Lessons for Better Baking, DVD. Thirteen baking ingredient function and science segments demonstrating baking ingredient use, procedures and terms. www.homebaking.org


Food allergies. Food allergy management practices and guidelines.


The American Academy of Allergy, Asthma and Immunology 1-800-822-2762; www.aaaai.org

Food Allergy Network cooking and baking. 1-800-929-4040; www.foodallergy.org


Email: celiacs@csaceliacs.org


*Students can help build literacy with both reading and foods by merging the activities. For a more complete list refer to:*

**Book and Bake Literature Connections:**


Book and Bake literature connections in the labs include:


*Read Across America.* www.nea.org


**Food Skills to Teach Nutrition and Wellness:**

*Be a Cabot All-Star Chef.* PDF Teacher activity for using favorite student recipes with healthier ingredients by using a local chef and rating recipes with all-star criteria. cabotcheese.coop/edprograms

*Bell Institute of Health and Nutrition, Whole Grain Teaching Resources.* www.bellinstitute.com
ChooseMyPlate grain food resources, Glencoe On-Line Learning Centers. Family and Consumer Sciences. www.glencoe.com


Kids a Cookin’ and Movin’. Kansas State University. Spanish and English food skill teaching aides and on-line video demonstrations. www.kidsacookin.org


Baking Periodicals:

The Baking Sheet. (ISSN: 1087-3600) Bi-monthly newsletter. Published by The King Arthur Flour Company. 58 Billings Farm Road, White River Junction, VT 05001. Susan Reid, editor. Contact: customercare@kingarthurflour.com or P: 800.827.6836

Cook’s Illustrated. (ISSN: 1068-2821) Bi-monthly. Published by Boston Common Press Limited Partnership, 17 Station St. Brookline, MA 02445. P: 800.526.8442 www.cooksillustrated.com

FamilyFun magazine. 10 issues annually. Published by Disney. www.FamilyFun.com

FoodBusinessNews. (ISSN: 1554-3498) Weekly news, markets and analysis for the baking and food processing industry. Published by Sosland Publishing Company, 4800 Main Street, Suite 100, Kansas City, MO 64112 P: 816.756.1000. E: mbn@sosland.com www.foodbusinessnews.net

Home Baking e-news: Monthly educator e-newsletter from the Home Baking Association. Sign up at www.homebaking.org Also check out member e-newsletters at our member links!

Human Resources, Printed Guides, Brochures, Downloadables:

Alpha-Bakery. Children’s Cookbook. Gold Medal Flour. 1997. $3.00 each at General Mills, PO Box 390599, Maple Plain, MN 55592 www.bettycrocker.com


Bell Institute of Health and Nutrition. Wholegrain Educators Kit. www.bellinstitute.com


Baking with Friends. Sharon Davis and Charlene Patton. Baking activities, certificates, vocabulary, age-appropriate skills guidelines and tried and true recipes. 2010. www.homebaking.org


Camp Cookie Activity Book. Games, recipes, fun! Call Land O’ Lakes at 1-800-328-4155.

Classroom Baking Lessons. www.redstaryeast.com


Go With the Grain. Grain Foods Foundation. www.gowiththegrain.org


High Altitude Baking Publications. Colorado State University Cooperative Extension. www.cerc.colostate.edu or call 1-970-491-6198 or e-mail cerc1@ur.colostate.edu

Kneaded Notes. Red Star and SAF Yeast. www.redstaryeast.com

Life Skills Bread Baking Program. On-site assembly for Grades 4-7. Contact King Arthur Flour Company, 1-800-827-6836 or www.kingarthurflour.com


Posters...Grain foods and nutrition. Wheat Foods Council. www.wheatfoods.com

Rainbow Bakery. A Color-full Adventure Children’s Cookbook. Gold Medal Flour. 1998. 33 flour-based craft and baking projects for children. $3.00 each at Gold Medal Flour, PO Box 390599, Maple Plain MN 55592. www.bettycrocker.com


On-line Resources for Baking and Cooking with Young Consumers:

Argo Cooking with Kids. www.argostarch.com

All about Cooking; All About Baking. Gold Medal Flour. www.bettycrocker.com  (Click on Cooking, Baking & Entertaining)


Baking How-To’s/Baking features. www.landolakes.com

Bake with Kids. Fleischmann’s Yeast. www.breadworld.com

Baking with Kids! www.redstaryeast.com

Betty Crocker Gold Medal Baking How-to Videos. www.bettycrocker.com

Bob’s Red Mill Video Library. www.bobsredmill.com

Bread Art Project. Grain Foods Foundation. www.gowiththegrain.org


Clabber Girl Baking Fun. www.clabbergirl.com

Classroom Baking Lessons. www.redstaryeast.com

Common Ingredient Master Weight and Measurement Chart. www.kingarthurflour.com/recipes

Family Fun and Baking with Kids. www.chsugar.com and www.dominosugar.com


Grains of Truth Fact Sheets Dozens of downloadable food and nutrition fact sheets for grain food related topics for professionals and consumers. www.wheatfoods.org

Great American Bake Sales. Help end childhood hunger. www.gabs.strength.org


Holidays, Parties and Gifts. www.chsugar.com and www.dominosugar.com

How to Bake Videos. www.redstaryeast.com

Find the Farmer. Easy-to-use website for you to locate the family farms that grow the grain that Stone-Buhr mills to make your flour. www.findthefarmer.com

Healthy School Resources: Grants for health initiatives and free nutrition education materials and posters: www.cabotcheese.coop

The Wheat Foods Network. Interactive program filled with factual information, vibrant video and 3-D animation and fun, educational activities. www.wheatfoods.org

Ingredient Substitutions. www.landolakes.com

Just for Kids. www.wheatfoods.org

Non-Profit Baking and Food Education Web-sites:

American Dietetic Association. www.eatright.org

American Institute of Baking. www.aibonline.org

Asthma and Allergy Foundation of America. Educational resources. www.aafa.org

Bell Institute of Health and Nutrition. www.bellinstitute.com

Colorado State University Extension. Foods and Nutrition. www.ext.colostate.edu Telephone: (970) 491-6281

High-Altitude Baking publications.


How to Bake videos. (add) www.breadworld.com; www.chsugar.com; www.homebaking.org; www.dominosugar.com

Our Farmers. www.kingarthurlflower.com/ourfarmers/

California Raisin Marketing Board. www.loveyourraisins.com/baking

Colorado Wheat Administrative Committee. www.coloradowheat.org

Culinary Institute of America. www.ciachef.edu

Food Allergy and Anaphylaxis Network. Cooking and Baking Tips. www.foodallergy.org

Food and Drug Administration (Food Labeling). www.cfsan.fda.gov

www.homebaking.org
**Food Guide Pyramid/Dietary Guidelines for Americans 2010.**  www.nutrition.gov

**Food Marketing Institute. FightBAC! BeFoodSafe.**  www.fmi.org/consumer/

**Global Youth Service Day.**  www.gysd.org

**Grain Foods Foundation.**  www.gowiththegrain.org

**Great American Bake Sales.**  Help end childhood hunger.  www.gabs.strength.org

**High Altitude Baking guides.**  www.ext.colostate.edu/pubs/pubs.html

**International Food Information Council.**  www.foodinsight.org

**Johnson County Community College, Baking & Pastry.**  Overland Park, KS  P: 913.469.8500.  www.jccc.edu

**Johnson & Wales University Baking & Pastry Arts.**  Toll free: 1-800.DIAL-JWU  www.jwu.edu

**Kansas State University Bakery Science & Management.**  T: 800-355-5531  E: grains@ksu.edu  www.grains.ksu.edu

**Kansas State University Cooperative Extension.**  Grains foods and nutrition information. 2004.  www.oznet.ksu.edu/ext_F&N/Nutlink/n2.htm

**Kansas State University Kids A Cookin’.**  www.kidsacookin.org  (English and Spanish available)

**Kansas Wheat Commission.**  www.kswheat.com  with multiple education links.

**Living Well.**  National Extension Association of Family & Consumer Sciences office locator.  www.learningandlivingwell.org

**Nemours Foundation.**  www.kidshealth.org; www.teenshealth.org

**Non-Profit.**

  - American Cleaning Institute.  www.cleaninginstitute.org
  - Association for Career & Technical Education (ACTE) at www.acteonline.org/
  - Family, Career, and Community Leaders of America (FCCLA)  www.fcclainc.org

**North American Millers’ Association.**  www.namamillers.org

**Retail Bakers of America.**  Representing 50,000 retail bakeries.  800.638.0924.  www.rbanet.com

**South Dakota Wheat Commission.**  www.sdwheat2.org

**The Sugar Association.**  www.sugar.org

**SkillsUSA Culinary Career and Technical Assessments.**  T: 703-737-0638 or info@workforcereadysystem.org.  www.skillsusa.org

**USDA-Health and Human Services:** U.S. Dietary Guidelines, Food Pyramid, and how to read food labels and more!  www.nutrition.gov and www.mypyramid.gov


**Washington Grain Commission.**  www.washingtongrainalliance.com

**Wheat Foods Council:** How wheat is grown, grain food and nutrition facts; recipes; research reports on carbohydrates, fad diets, whole grain; food photography and more.  www.wheatfoods.org

**Whole Grains Council.**  www.wholegrainscouncil.org