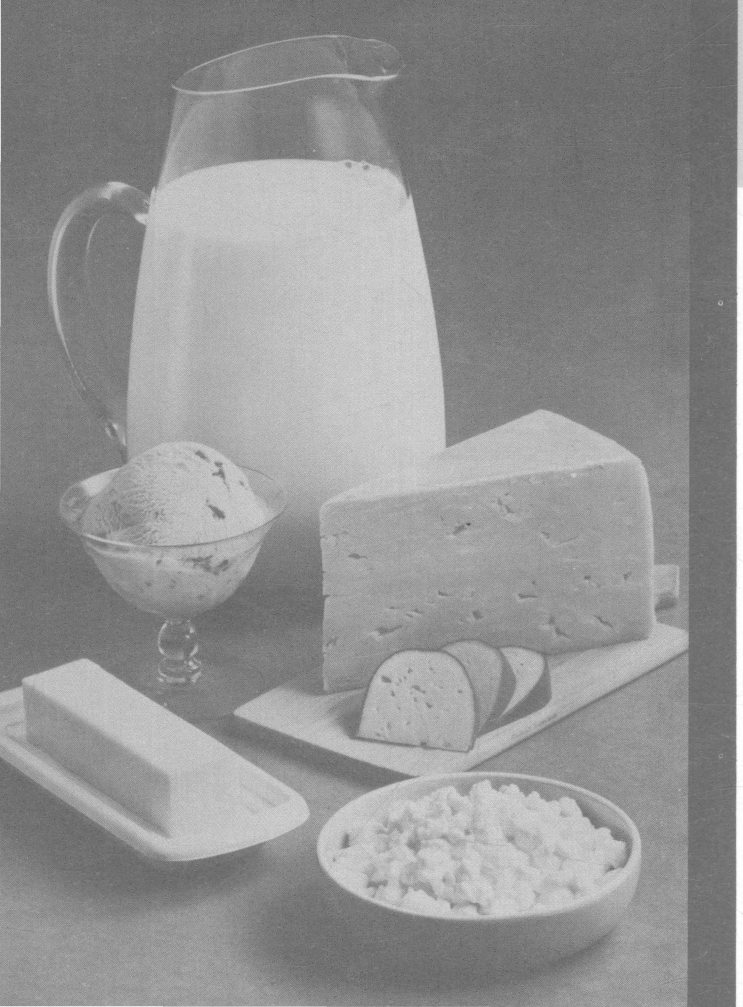
bulletin 414

MILK

COOPERATIVE EXTENSION SERVICE
The Ohio State University



MILK

Table

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NUTRIENTS

Milk, a baby's first food, is needed by both children and adults as a source of nutrients essential for growth and health. Let's take a look at the nutrients milk and other dairy products contain and see why the body needs them.

Calcium

Milk is an excellent source of calcium, essential for bone and tooth development. Calcium helps to keep bones from becoming brittle and breaking easily in adult life. This mineral is also needed for the clotting of blood and the normal functioning of muscles and nerves.

Because no other foods contain such generous amounts of calcium, milk is counted on to furnish the major portion of the body's daily needs of this mineral. Cheese and ice cream, though not as rich per serving in calcium as milk, can provide part of the calcium needed daily. Infants, growing children, expectant and nursing mothers need increased amounts because of their greater need for calcium.

In addition to calcium, milk is an excellent source of phosphorous, another mineral the body uses for building strong bones and teeth, as well as for many other functions.

Protein

This nutrient is the main building and repair material of all living body tissues. Milk's high quality protein is present in other dairy products, too. Three tablespoons

of cottage cheese or 1¼ ounces Cheddar cheese provide as much protein as 1 cup milk or 1⅓ cups ice cream. Milk protein is a complete protein because it contains all of the essential amino acids. It supplements the incomplete proteins of cereal and grain products when served with them.

Riboflavin

The "keep young" vitamin, as riboflavin is sometimes called, promotes general health at all ages. Milk's contribution of riboflavin (vitamin B_2) is almost as outstanding as its calcium contribution. This vitamin assists in the body's use of carbohydrates, proteins, and probably fats. Riboflavin is essential for the health of skin, eyes, and nerves.

Riboflavin is light-sensitive. Two hours of direct sunlight may destroy 50 to 75 percent of this vitamin. Milk must be properly stored to protect the riboflavin. Pasteurization destroys only a small percent of the riboflavin present.

Per serving, milk is the best source of riboflavin, of all the dairy products. A pint of milk provides about half the riboflavin needed daily by an adult. One ounce of cheese contains less than a third the amount of riboflavin in 1 cup of milk. Ice cream, too, has less riboflavin than milk.

Vitamin A

The body uses this vitamin for growth, vision, and to keep the skin and membranes that line the mouth, throat, nose, and respiratory passages in good health.

The amount of vitamin A present in any dairy product depends on three things – the animal that produced the milk, the amount of milkfat in the product, and the amount of Vitamin A-rich green feed the cow eats. This vitamin is always found in the fat portion of a dairy product.

Butterfat is the fat from butter. Milkfat is fat from milk and fluid milk products. Since butter is almost entirely butterfat, it's one of the richest sources of vitamin A. Milk, cream, ice cream, and cream cheese all contain fat and, therefore, vitamin A in direct proportion to the amount of fat. Because fat is removed with the cream, skimmed milk and cultured buttermilk contain

only small amounts of vitamin A unless they have been fortified.

Food Energy

The calories milk and dairy products provide are a source of food energy needed to keep all body processes in operation. Of all the dairy products, skimmed milk or buttermilk contain the fewest calories. Cheese and cream are rich in food energy because they have a higher milkfat content.

Calories in Dairy Products

1 c. whole milk	165
1 c. nonfat (skimmed) milk	85
1 c. evaporated (undiluted) milk	345
1 inch cube Cheddar cheese	115
½ c. cottage cheese, uncreamed	108
1 T. cream cheese	56
1 T. light cream	30
1 T. heavy cream	50
1 T. butter	100
1/7 qt. ice cream, plain	167

Other Nutrients

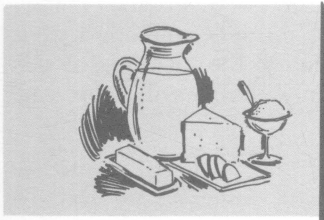
Milk and dairy products have small and varying amounts of other nutrients, such as thiamine, other B complex vitamins, vitamin C, and vitamin D. Copper and iron are present in very small amounts. For more information about vitamin-fortified milk, see page 9.

Daily Requirements

Everyone Needs Milk Everyday

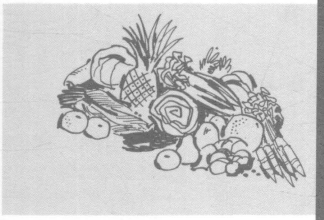
How much milk does every family member need daily? While milk has a generous supply of protein, vitamins, and minerals, calcium is its most important contribution to our diet. Most foods contain little, if any, of this mineral. Calcium is the nutrient most frequently found to be lacking in adequate amounts in the diets of Ohio school children and their families in research studies conducted by the Ohio Agricultural Experiment Station.

The more rapid the growth of the child, as in the first year of life and during the teenage period, the more urgent is the need for this nutrient, and for milk which

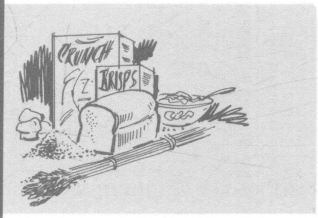


Milk

Meat, Eggs
Dried Beans



Vegetables
Fruits



Bread
Cereals

supplies it most generously. The expectant and nursing mother needs a generous daily supply to provide the calcium and other nutrients milk contains. All adults, including the senior citizen, need milk, especially for its calcium to keep bones strong. The excellent quality protein, the riboflavin, vitamin A and smaller amounts of other nutrients milk provides are added "health insurance" for all family members.

Here is the amount of milk each family member needs **daily** to insure an adequate supply of calcium.

How Much Milk?

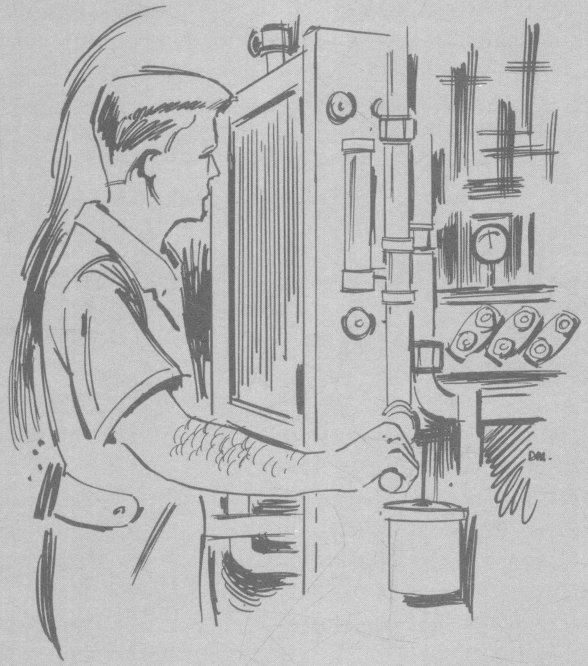
Children	3 to 4 cups
Teenagers	4 or more cups
Adults	2 or more cups
Expectant mothers	4 or more cups
Nursing mothers	6 or more cups

Part or all of the milk may be fresh fluid, skimmed milk, buttermilk, evaporated, dried whole milk, or nonfat milk solids (dry skimmed milk).

Cheese and ice cream may replace part of the milk. The table below shows the amount of these dairy products (on the basis of calcium content) that may replace a given amount of milk.

1-inch cube Cheddar cheese	⅔ c. milk
½ c. cottage cheese	⅓ c. milk
2 T. cream cheese	¼ c. milk
½ c. ice cream	¼ c. milk

MILK TREATMENTS



Many wholesome milk products – fresh and manufactured – are available. Labels on milk containers give reliable information. Understanding the meaning of the terms which appear on container labels will help you make a better selection.

Pasteurized Milk

Raw milk is treated with heat, followed by prompt cooling, to destroy any harmful bacteria present in the milk which may cause such diseases as undulant fever, septic sore throat, and others known to be transmitted by milk. This process is important to our health because it protects us against disease.

Pasteurization not only makes milk safe but improves its keeping qualities. Milk may be pasteurized at home as well as in the dairy plant.

Graded Milk

The terms pasteurized and graded, usually go together on milk labels. They show the milk has been processed and handled under state or city regulations to insure a safe product.

Homogenized Milk

Homogenization is a mechanical process in which the fat globules of whole milk are broken up and uniformly distributed throughout the liquid. As a result, there is no cream line. Homogenized milk has a softer curd than non-homogenized and is thought to be more digestible.

Vitamin D Milk

Vitamin D milk is milk to which vitamin D has been added. U. S. Public Health Service standards for vitamin

D milk require that the concentration of the vitamin be at least 400 U.S.P. units per quart. Usually, vitamin D is added to homogenized milk.

Fortified Milk

Fortified milk is milk to which nutrients normally present in milk have been added. It usually costs more than plain milk.

Nutrients, such as vitamin D, vitamin A, or minerals may be added in order to insure the minimum daily requirements per quart of milk of those nutrients which may be in milk in a low quantity. Additional milk solids are sometimes added in order to improve the nutritional value and flavor.

Home Pasteurization

Start with clean, fresh milk. Pasteurization cannot make spoiled milk sweet again!

Two methods may be used.

1. **Flash method:** Heat the milk to 165°F. in a double boiler or kettle. The milk is less apt to scorch if a double boiler is used. Stir the milk continuously when using an open kettle. If a double boiler is used, place a lid over the boiler until the right temperature is reached. You will need a thermometer to properly gauge the correct heat.

When the milk reaches 165°F., remove it from the heat and cool it in cold water to 60°F or below as quickly as possible. Then place it in the refrigerator.

2. **Holding method:** In this method, the milk does not reach as high a temperature but more time is needed to complete the process.

Heat the milk to 145°F. and maintain this temperature for 30 minutes. The 145°F. temperature must be maintained for no less than 30 minutes or the harmful disease bacteria may not be completely destroyed. Cool the milk after the heat treatment in the manner described in the flash method.

For safety's sake – pasteurize. It's worth the time and effort to insure your family of a safe milk supply.

KINDS OF MILK

Fresh Fluid Milks

Standardized milk – Milk which by Ohio law has not less than 3.5 percent butterfat content and 12 percent total milk solids.

Skimmed milk – Whole milk from which most of the butterfat has been removed. By Ohio law, it contains less than 3 percent milkfat. Consequently, skimmed milk has less vitamin A, but contains the protein, calcium, and riboflavin of whole milk. Because skimmed milk has about half the calories of whole milk, it is often used in weight control diets. It is often fortified and may contain non-fat milk solids.

Chocolate milk, chocolate dairy drink, or chocolate drink – Chocolate milk has chocolate syrup or cocoa sugar or syrup added to milk of not less than 3.5 percent butterfat. Chocolate dairy drink or chocolate drink is made with milk that has a lower fat content, not less than 2 percent, and may also have vanilla, salt, and a stabilizer present. Chocolate drink is made in the same way with milk of not more than 2 percent fat content. This must be labeled "made with skimmed milk."

Cream – Cream is sold according to milkfat content. The higher the fat content, the more expensive the cream. In Ohio, there are two types – coffee cream and whipping cream. Coffee cream has a minimum of 18 percent milkfat, and whipping cream has a minimum of 30 percent milkfat.

Half and half – This is a mixture of half milk (3.5 percent milkfat) and half cream (18 percent milkfat).

The product has a milkfat content of about 10-11 percent. It is usually homogenized.

Refrigerator Storage

Store fresh fluid milk and cream at 40°F. or below in a covered container to protect flavor and nutritive value. If left uncovered, milk and cream may pick up flavors of other foods; so reclose a partially emptied container after use.

Use milk and cream within three to four days. Dairy products will hold up in quality for longer periods if refrigerated properly. Keep milk out of strong light to protect the riboflavin and to prevent an off flavor from being produced by the light.

Freezer Storage

Freezing and thawing of fluid milk or cream will produce a flaky protein condition which shows up as fine particles. The nutritional value is not affected but the appearance is undesirable.

Homogenized milk and cream can be frozen and thawed more satisfactorily than un-homogenized because of less fat separation on thawing. Thaw frozen milk slowly by placing cartons in the food compartment of the refrigerator over-night or by placing cartons in cold water for several hours. Thawing rapidly with warm water causes fat separation and results in a difficult re-mixing problem.

Whipping cream may be stored satisfactorily in the freezer for not more than one month.

Cottage cheese—An unripened, glistening white cheese with tender, soft curds, cottage cheese is sold either plain or creamed. The plain is just that – the curds of cheese only. Creamed cottage cheese has cream added, the mixture contains not less than 4 percent milkfat.

Refrigerator Storage

Cottage cheese must be tightly covered to prevent absorption of odors. Use creamed cottage cheese soon after purchase, within three to four days, for top flavor and quality.

Freezer Storage

Do not freeze creamed cottage cheese as it will separate on thawing. Uncreamed dry or curd cottage cheese will freeze satisfactorily in waxed cartons or freezer containers for not more than a month. These products will generally be soft or mushy on thawing.

Cultured Milks

Cultured milks are made by adding certain selected desirable micro-organisms to pasteurized whole or skimmed milk.

Buttermilk – Originally buttermilk was a by-product of butter-making. Now cultured buttermilk is the most common type today. It is made from skimmed milk cultured with flavor producing organisms which give this product its acid character and its consistency.

Yogurt – This product has a custard-like consistency and is manufactured from partially concentrated whole milk which is fermented by a mixture of flavor and acid forming organisms. It has a distinctly acid taste.

Refrigerator Storage

Give cultured milks the same careful storage recommended for milk and cream. For maximum flavor, use cultured milks within three or four days after purchase.

Freezer Storage

Freezing and thawing changes the body and texture of cultured milks and is not recommended.

Evaporated and Condensed Milks

Evaporated milk – About half the water of fluid, homogenized whole milk is removed by evaporation. The milk is then sealed in cans and sterilized. By adding an equal amount of water, evaporated milk can be used like whole milk. The food value is similar to that of whole milk and most evaporated milk has vitamin D added. Evaporated milk is sold in 6 ounce and 14½ ounce cans. It usually costs less than fluid milk.

Evaporated skimmed milk – This is one of the newer dairy products on the market. When diluted with an equal amount of water, it may be used like fresh skimmed milk.

Sweetened condensed milk – This is a concentrated milk containing about 40 percent sugar. It is not sterilized by heat but the high sugar content preserves it. Condensed milk is sold in 14 and 15 ounce cans for home use.

Storage

Unopened cans of evaporated milk and sweetened condensed milk will keep well over a year with no marked physical changes if stored in a dry ventilated place below 60°F. Physical changes may occur in these milks at higher temperatures but the nutritive value is not changed. Pantry shelf or cupboard storage is usually higher than 60°F. You may need to replenish the supply periodically or purchase only two or three month's supply at a time.

Brush wash the top of the can before opening to remove dust. (If evaporated milk is used for infant formula, scald the can by pouring boiling water over it before opening.)

Refrigerator Storage

Store the opened can of evaporated milk in the coldest part of the refrigerator. Use the contents within four or five days. If refrigeration isn't available, evaporated milk will usually keep in a clean, cool place slightly longer than regular pasteurized milk.

Keep unused sweetened condensed milk cool, covered, and away from direct sunlight. Store in a clean container at 40-45°F. to keep in satisfactory condition up to 10 days. It may be stored in the original can.

Dry Milk

This is a product which contains 2-3 percent water and can be reconstituted to skimmed milk by adding 8 parts water to one part dry milk solids.

Nonfat dry milk solids – Two types of packaged nonfat dry milk are on the market. One is called "nonfat dry milk" and the other "instant nonfat dry milk." Both products are manufactured from skimmed milk and both are the same as skimmed milk when reconstituted with water. The difference in these products is that instant nonfat dry milk is easily soluble, even in cold water. Follow directions on the container for reconstituting the milk. Both products have good keeping qualities and are low in cost.

Chocolate flavored nonfat dry milk mix – This is a powdered mixture made with nonfat dry milk solids, chocolate, and sugar.

Dry whole milk – Because of the higher fat content, dried whole milk does not have the keeping quality that nonfat dry milk has. Retail distribution is limited to an experimental basis at the present.

Storage

Properly packaged nonfat dry milk may be kept in a cool, dry place without refrigeration for at least six months. Temperatures above 90 F. will cause some flavor changes. If an opened package is exposed to high humidity, the powder will cake and flavor will change.

Give reliquefied nonfat dry milk the same care as pasteurized fluid milk. Keep in a covered container in the coldest part of the refrigerator. Prepare only two or three days supply at a time.

Other Kinds of Milk

Soft-curd milk

This is a product which has had the calcium and phosphorous content lowered about 20 percent so the curd formed by the milk will be soft. It is prepared for use by infants and invalids. It is easier to digest than ordinary milk and usually sells at a higher price.

Concentrated milk – This is homogenized fresh fluid milk with part of the water removed. It is available in only a few retail markets. In the frozen form, concentrated milk will keep six weeks to three months. It is often used on ships in over-seas travel.

Malted milk – This product is a powder made by drying a mixture of whole milk and the liquids separated from a mash of ground barley malt and wheat flour. It is available either plain or chocolate flavored. Keeping qualities are good.

Formula Diets – These have become popular in recent months. Distributed by pharmaceutical, dairy, and food companies, the formula diet is available in liquid, solid, or frozen form. What goes into these "weight-reducing" diets? They are made up of protein from milk and/or soya flour; fat from milk, corn, and/or coconut oil; and carbohydrates from lactose, sucrose, and/or starch. While

amounts of vitamins and minerals vary between brands, they do meet or exceed known needs. Such formulas provide about 900 calories per day, consisting of 30 per cent protein, 20 percent fat, and 50 per cent carbohydrate.*

*Source Statement by the Council on Foods and Nutrition, entitled "Formula Diets and Weight Control," Journal of The American Medical Association, May 6, 1961, Vol. 176, No. 5, p. 439.

Getting the Most Milk for the Money

Smart shopping can help you get more milk for your money. Here are several ways to stretch the milk dollar in a tight family budget.

Carry your own supply. In some cities, you can save one to three cents per quart by purchasing milk at the store rather than having it home delivered. Check your local area.

Check discounts. Some milk delivery firms have special rates for quantity deliveries or for a certain amount delivered regularly.

Price large containers. Milk generally sells for less per quart in two quart or gallon containers than by the quart or pint.

Price different forms of milk. Generally, fluid skimmed milk, evaporated milk, buttermilk, and dried nonfat milk solids cost less than fresh whole milk. Often these less expensive types can be used in place of or in addition to whole milk.

Milk Prices

In One Market in Columbus, Ohio
January, 1963

Kind	Unit	Cost per Unit	Cost per Cup
Standardized, homogenized milk	gal. (in glass)	72c	4.5c
	½ gal. (in glass)	37c	4.6c
	½ gal. (in paper)	46c	5.8c
	1 qt.	25c	6.2c
Fortified, homogenized milk	½ gal.	49c	6.1c
Skimmed (fortified)	½ gal.	39c	4.9c
	1 qt.	22c	5.5c
Buttermilk (flake and creamed) (plain)	1 qt.	25c	6.2c
	1 qt.	22c	5.5c
Chocolate dairy drink	1 qt.	28c	7.0c
Chocolate milk	1 qt.	28c	7.0c
Half and half	1 qt.	65c	16.2c
Yogurt	½ pt.	28c	28.0c
Evaporated whole milk	14½ oz.	4 for 59c	4.1c
Evaporated skimmed milk	14½ oz.	3 for 31c	2.8c
Nonfat dry milk	3 qt.	30c	2.5c
	14 qt.	$1.23	2.2c

Milk Cookery

Low temperature is the guiding rule in milk cookery. Because of milk's high protein content, it must be treated like other protein foods. Use low oven temperatures for baked products made with milk as well as low temperatures for top-of-the-range cooking.

Milk scorches easily. Cook it in a heavy gauge pan over low heat stirring constantly or in a double boiler.

Milk foams up quickly when it reaches the boiling point. Heat it slowly or cook over hot water to prevent boiling over.

Ever wonder what causes the scum that forms on top of milk and cocoa when heated? The scum is one of the milk proteins which the heat has coagulated. Heating milk over hot water, beating with a rotary beater or stirring the heated product before serving helps prevent the scum formation.

When eggs and a hot milk mixture are combined (as in custard or pudding), add a small amount of hot milk to the beaten egg. The egg-milk mixture may be added then to the remaining milk without becoming lumpy or stringy.

To prevent curdling when combining acid fruit juice and milk for beverages, add chilled fruit juice slowly to cold milk. Stir rapidly. For cream of tomato soup, add thickened hot tomato juice slowly to cold milk.

Creamed dishes, custards, and other cooked foods

made with milk spoil readily. Cool quickly and store in a cold place (42° to 45°F.) in the refrigerator until serving time. Serve these foods promptly. Refrigeration for longer than 24-48 hours is not recommended.

Using Milk in the Family's Meals

Serve it plain as a beverage at meals or between meals.

Combine milk with fruit juice or other flavorings for a between meal snack and a quick pick-up.

Serve cream soups as an appetizer or as a luncheon and supper main course.

Cook cereals in milk.

Serve vegetables in white sauces made with milk.

Provide generous portions of milk for ready-to-eat and cooked cereals.

Serve chowders, bisques, and a variety of casserole dishes and stews made with milk as a lunch or supper main dish.

Use milk as the liquid in meat and fish loaves, croquettes, and similar main dishes.

Use milk in making yeast bread, quick breads, cakes, and other baked products to improve color, flavor, and to help them keep moist longer.

Use milk in many kinds of baked and frozen desserts.

Milk and Cream Served in Food Service Institutions

Milk served in a food service institution is most often served from either a bulk dispenser or an individual serving container. In Ohio, the bulk milk dispenser must be fully visible to the customer to meet public health regulations, but there are presently no restrictions on size or type container in which the milk is served. The individual serving container – usually a half-pint carton or bottle – must be brought to the customer and opened before him.

The only regulation governing the service of cream in a food service establishment is that it be properly refrigerated in a sanitary manner.

Enrich Foods With Nonfat Dry Milk

The food values of some dishes can be stepped up by using extra amounts of nonfat dry milk. Dry milk can be added to fresh milk in some recipes.

In any recipe calling for milk, add the milk powder to the dry ingredients. Then add water for the required amount of liquid. When milk is used as a liquid in cream soups and white sauce, reconstitute the dry milk with water before preparing.

Ways to Use Nonfat Dry Milk

Muffins, pancakes, and waffles: Use 4 to 6 T. plus 1 c. water for each cup of milk in the recipe.

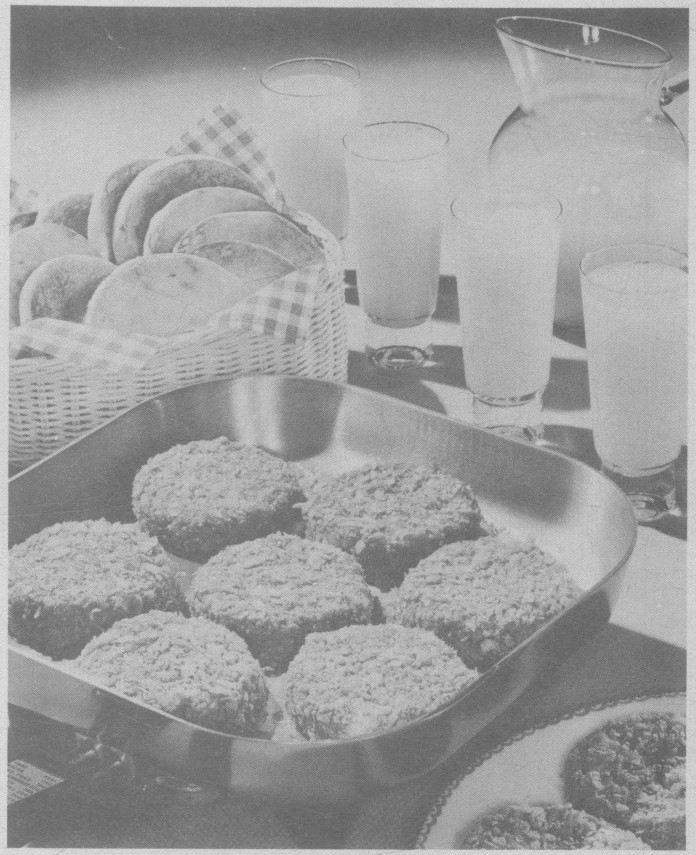
Biscuits and cakes: Use 4 to 6 T. plus 1 c. water for each cup of milk the recipe requires.

Cooked cereals: Add ¼ to ½ c. for each cup of cereal before cooking.

Meat loaf, meat balls, hamburgers: Use ¼ c. to each pound of meat.

Mashed potatoes: Mash, add ½ c. for each cup of potatoes. Use fresh milk or potato water to give the right consistency.

White sauces and cream soups: Use 4 T. with 1 c. of water for each cup of milk called for in the recipe, or add 2 to 4 T. to each cup of fresh milk.



KINDS OF CHEESE

More than 20 different varieties of cheese are sold in the United States and each variety contains several types. A modern food store will display cheese in all sizes, shapes, and flavors. Over 2 billion pounds of cheese are produced annually, using about one eighth of the total United States milk production.

Natural Cheese

Natural cheese is made by coagulating milk, cutting, stirring, and heating the curd, draining off the whey, and collecting or pressing the curd. The cheese varies with the kind of milk used, the amount of fat and water in the curd, the flavor and texture acquired during ripening. Some favorite natural cheeses include:

Cheddar – Seventy-five percent of the cheese produced in the United States is Cheddar, also called American cheese. Flavor and texture of Cheddar cheese depend on the aging process. The cheese varies in color from cream to deep orange-yellow. The texture varies from fine to crumbly; flavors range from mild to sharp.

Swiss – Second in popularity to Cheddar, Swiss cheese is easily recognized by its round eyes or holes, pale yellow coloring, and firm texture. It has a mild, sweet, nutlike flavor.

Cream cheese—A soft, unripened cheese, cream cheese is snowy-white and mild in flavor. It is about half as rich as butter (33-40 percent butterfat).

Blue – This semi-soft cheese is an American relative of imported Bleu and Roquefort. It has a white interior marbled with bluish mold and a robust, salty flavor.

Parmesan – A light yellow cheese, Parmesan has a hard, granular texture and a robust, sharp flavor.

Provolone – This cheese has a creamy smooth somewhat plastic texture. Provolone is pale yellow with a robust but mellow, sometimes smoky, flavor.

Romano – A very hard, granular cheese, Romano is creamy white with a sharp, salty flavor.

Process Cheese

Process cheese is made from one or more natural cheeses. The cheeses are cut into small pieces, melted, pasteurized, and blended together. A process cheese has a uniform flavor and consistency. No further curing can take place because the bacteria and enzymes needed for ripening are destroyed by the pasteurization.

Process Cheese Foods and Spreads

Process cheese foods and spreads contain less fat and more moisture than regular process cheese. Fruits, vegetables, meats, spices, or other flavoring agents are often added.

Refrigerator Storage

Do not keep cheese outside the refrigerator for any length of time. Cheese dries out when exposed to air and has an undesirable appearance.

Keep cheese covered during refrigeration to keep it fresh and moist. Waxed paper, plastic film, aluminum foil, plastic bags, and the original package wrapping may be used. Keep the wrapping in close contact with the cheese and cut surfaces.

All cheese should be held at 40-45°F. refrigerator temperature. Unopened pasteurized process cheese, cheese foods, and cheese spreads need not be refrigerated if kept at or below room temperature (70°F.). Once opened, these products should be refrigerated.

Freezer Storage

The hard and semi-hard cheeses, such as Cheddar, Swiss, Edam, Gouda and Brick, may be frozen without

damage to flavor and texture. Soft cheeses, such as cream, Liederkranz, Limburger and Camembert, do not freeze well because of undesirable texture changes.

Blue cheese and Roquefort become crumbly after freezing and thawing. Freezing these cheeses is not recommended.

Cut cheese into individual pieces not larger than one pound to permit fast freezing. Wrap in moisture-vapor-proof material. Make certain the wrapping is close to the surface of the cheese to prevent air pockets and drying. Cheese is likely to become more dry and crumbly during freezing.

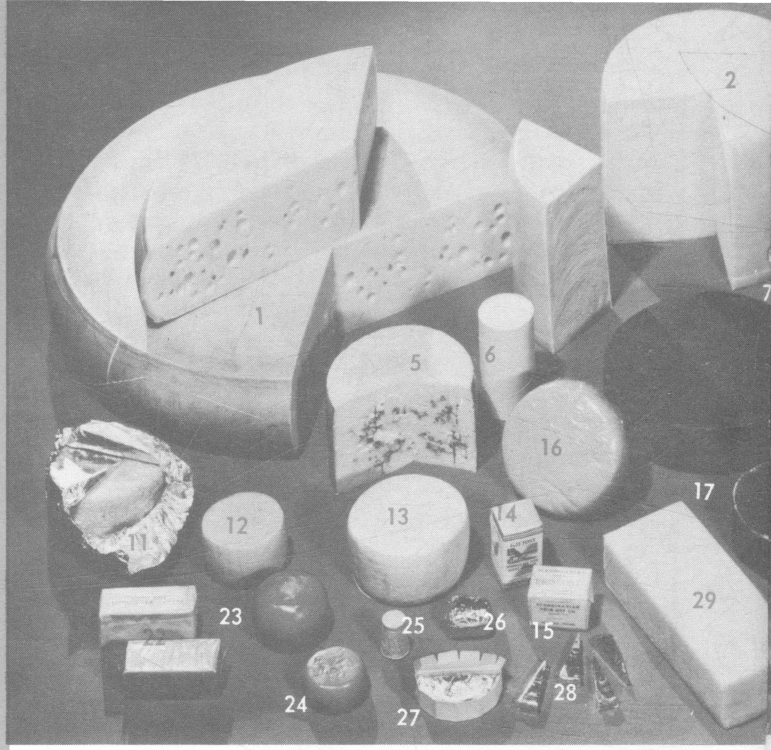
Thaw frozen cheese slowly in the original wrapper to prevent loss of moisture and flavor. It's a good idea to thaw cheese in the refrigerator or in a cool room.

Cheese Cookery

Cheese is a high protein food and should be cooked at a low temperature. High temperatures or long cooking tend to make cheese tough and stringy.

To melt cheese evenly and quickly, add it to other ingredients in small bits. Blending cheese into a smooth sauce before adding to other ingredients will help prevent curdling.

All cheese (except cottage cheese) tastes best when served at room temperatures. For good eating, let



COMMONLY USED CHEESES

1 – Wheel of Swiss
2 – American (Cheddar style)
3 – Romano
4 – American (longhorn style)
5 – Gorgonzola
6 – Cottage
7 – Asiago
8 – Brick
9 – American (daisy style)
10 – Provolone
11 – Blue
12 – Kumminost
13 – Muenster
14 – Gjetost
15 – Primost
16 – Bel Paese
17 – Sardo

18 – Cream
19 – Process Cheese Food
20 – Process American
21 – Parmesan
22 – Limburger
23 – Edam (cannonball)
24 – Baby Edam
25 – Sapsago
26 – Hand
27 – Brie
28 – Sectors of Blue
29 – American (10-lb. print)
30 – Apple
31 – Baby Gouda
32 – Process Cheese Spread
33 – Camembert
34 – Port du Salut (Oka)
35 – Nokkelost
36 – Block Edam
37 – Nordlands-Ost

Photo - National Dairy Council

cheese "warm up" out of the refrigerator for 30 minutes to one hour before serving.

Put out only enough cheese needed for the meal and return the remainder to the refrigerator. Pack any left-over portion together tightly and refrigerate. Wrap small pieces and place in a wide-mouth jar or in any tightly closed container.

Grate Cheddar, Swiss, and Italian cheese varieties when they become dry. Keep grated cheese in a covered container in the refrigerator and use within a few days to avoid flavor changes.

Uses of Cheese

Serve as a between meal snack.

Add slivers of cheese to tossed salads.

Use soft cheese, such as cream cheese, in sandwiches and appetizers.

Mix mayonnaise or French dressing with crumbled Blue cheese or any favorite cheese to add zip to salads.

Make "dips" for potato chips and crackers with cream and cottage cheese. Flavor dips with Blue or Roquefort cheese.

Use cheese in nourishing main dishes for lunch or supper meals.

Use a cheese sauce for vegetables, in casseroles, and scalloped dishes.

Serve wedges of cheese "as is" with slices of fruit for a quick, flavorful dessert.

KINDS OF BUTTER

Sweet cream butter and sour cream butter are the two types generally found on the market. Each has its own characteristic flavor. Most butter is made from sweet cream. Sour cream butter is made from naturally soured cream. Both sweet cream and sour cream butter may be purchased salted or unsalted.

Whipped butter found on the market contains 50 percent air. It may be salted or unsalted.

Quality Butter

All butter entering interstate commerce must be inspected for wholesomeness. Grading, however, is voluntary. When grading butter, inspectors "score" it. The butter is graded on flavor, body and texture, color, salt, and package.

U. S. table grades and their corresponding score are:

U. S. Grade AA	93 score
U. S. Grade A	92 score
U. S. Grade B	90 score
U. S. Grade C	89 score

A package displaying the shield-shaped emblem stamped with the Federal grade is a guide to quality butter.

Refrigerator Storage

Refrigerate butter as soon as you get it home. Hold at a temperature of 50°F. or below. A tight wrapper helps keep out any foreign flavor. The original wrapper plus waxed paper will give adequate protection if kept properly closed. Butter will keep for several weeks under refrigerated conditions. Salted butter generally keeps better than the unsalted product. Refrigerate butter being used in a covered container between meals.

Freezer Storage

Stored at 0°F., butter will keep its quality in the freezer for six to nine months. Frozen storage is actually better than refrigerator storage.

For freezer storage, place butter in an air-tight moisture-proof container or wrap in moisture-vapor-proof material.

Uses of Butter

Use butter as a spread, a sauce, and in cooked foods.

Garnish cream soups with bread cubes fried slowly in butter until crisp and golden brown.

Serve buttered bread crumbs over cauliflower, green beans, and other vegetables.

KINDS OF FROZEN DESSERTS

Ice cream, frozen custard, ice milk, sherbets and ices are the major kinds of frozen desserts. Frequently, certain frozen desserts are incorrectly referred to as "ice cream."

Frozen desserts differ in composition. **Ice cream** may be made with milk and cream, sweetening, and flavoring. But it may also have syrup, fruit, and nuts in the mixture. Occasionally egg yolk and/or egg whites are added to the ice cream mix. If egg is added in sufficient quantity, the product is called **frozen custard,** however the milkfat content remains the same. By Ohio law, ice cream and custard must contain 10 percent milkfat. Anything less than that must be called something else. The remainder of the frozen products fall into this latter category.

A product very similar to ice cream is called **ice milk.** This product has the same ingredients as ice cream but the milkfat content parallels that of milk (3.5%). Ice milk is often referred to as a low calorie frozen dessert.

Sherbet is a low fat product made of milk, cream, sugar or an ice cream base mixed with fruit juices and sometimes fruit itself. Color and citric acid or other edible acids are used to give the product its desired color and tartness.

Ices are simply fruit juices diluted with water, sweetened and frozen, color, fruit flavoring, and citric acid or other edible acids are added. The acid gives an ice its tartness. This product is usually sold in a novelty form such as on sticks or in cellophane packages.

Freezer Storage

Ice cream should be kept firm as much of the time as possible. Softening or partial melting tends to produce a coarse texture when the product is refrozen. Use insulated bags for carrying ice cream from the market.

If stored at 0°F. or below, ice cream can be kept satisfactorily for one month.

Packaging is very important if ice cream is to be kept longer than a week. Overwrap the carton with moisture-vapor proof material or transfer the ice cream to a moisture-proof container if it is to be stored for any length of time.

In serving, take out the amount needed for the meal and return the unused portion immediately to the freezer. Avoid warming and cooling as much as possible to reduce ice crystal formation.

Sherbets and ices can be stored in the freezer successfully at 0°F. or below for a month. Sherbets are more sensitive than ice cream to texture changes which result from variations in temperature. Therefore, a low uniform holding temperature is needed.

Uses of Frozen Desserts

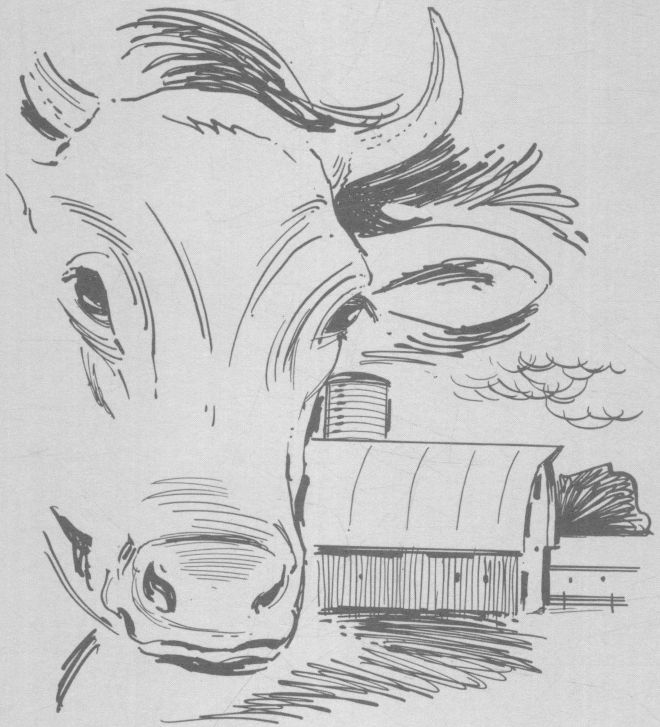
Serve a variety of frozen desserts to top off simple lunch or supper menus.

Serve ice cream plain or with a variety of toppings as between meal snacks.

Add a scoop of ice cream, sherbet, or ice to chocolate milk or fruit juices for a quick, tasty beverage.

Float ice cream in the juice or heavy syrup left from canned fruit.

PRODUCTION AND PRICE



Milk was included on the early voyages to America and will probably go along on man's journeys into outer space. The dairy industry's importance to our national economy – as well as our health – is emphasized by the amounts of dairy products the average American eats each year.

Consumption per person in 1959 was 140 quarts of fresh fluid milk, 8.6 pounds of cheese, 5.1 pounds of cottage cheese, 18.1 quarts of ice cream, 8.8 pounds of butter, 15 tall cans of evaporated milk, and 5.25 pounds of dry milk. The United States ranks only twelfth in world consumption per person.

Ten states, of which Wisconsin leads with 13.5 percent of the milk produced, produce 60 percent of the nation's milk. Ohio ranks eighth in production.

Seasonality of milk production affects the price, and the way milk is priced affects the seasonality of production. The homemaker's demand for milk is relatively constant but milk production is somewhat seasonal. It is difficult for the farmer to maintain a herd with even production throughout the year. Therefore, pricing milk to producers include factors to encourage more even monthly production.

The price to the consumer for dairy products is calculated as approximately the sum of the price received by the farmer plus the cost of various marketing functions needed to put the product on the doorstep or in the store.

Prices received by dairymen are designed in Ohio for the most part by Federal milk marketing orders. By public hearing, producer milk pricing formulas are established and approved by the milk producer. A minimum price is established according to how the milk is used in the market. For example, milk used as fresh fluid milk receives a higher price than that used for butter or cheese.

Fluid or bottled milk must meet "Grade A" requirements at the farm, is bulky and perishable, and relatively expensive to transport; thus, it demands a higher price both at the producer's farm and at retail. Marketing services make up a large part of the retail price of milk. Its quality is assured by sanitary regulations designed to control quality from the cow to the consumer's refrigerator.

Milk used to manufacture dairy products, such as butter, cheese, ice cream, evaporated milk, and others, can be shifted from one use to another according to the demands for these products. The products manufactured are not as perishable as fluid milk and they can be sold on an "offer and acceptance" basis. This permits the forces of competition to operate much more freely.

Various new products, larger containers, store pick-up, and other factors influence the use of dairy products and the price of these products.

The "Real" Price of Milk

Year	Average price per quart of home delivered milk	Average Hourly Factory Wage	Minutes of work required to earn price of 1 qt. milk
1890	6.8c	$ .16	25.5 min.
1914	8.9c	.233	22.9 min.
1929	14.4c	.566	15.3 min.
1947	19.6c	1.237	9.5 min.
1953	23.4c	1.77	7.9 min.
1958	25.3c	2.13	7.1 min.
1959	25.3c	2.22	6.8 min.
1960	25.7c	2.29	6.7 min.
1961	26.2c	2.32	6.8 min.

Source: U.S. Bureau of Labor Statistics

Production by States

(Top 10 States – 1960)

State	Million Pounds
Wisconsin	17,953
New York	10,159
Minnesota	10,158
California	8,109
Pennsylvania	6,807
Iowa	5,966
Ohio	5,225
Michigan	5,090
Illinois	4,129
Missouri	3,711

Source: U.S.D.A.

Per Capita Consumption Abroad

Consumption Milk and Dairy Products

Country	Per Capita 1958	1959
Ireland	1.555	1,546
New Zealand	1,298	1,322
Finland	1,312	1,313
Sweden	1,020	1,068
Switzerland	939	989
Denmark	1,082	978
Australia	991	953
Canada	954	947
Belgium	912	922
Norway	875	856
United Kingdom	857	838
France	808	800
Rep. of Germany	696	761
Netherlands	726	704
United States	689	678
Austria	667	653
Italy	325	337

FACT OR FALLACY?

Fallacy: Milk is fattening.

Fact: Weight gains are caused by eating more calories than the body needs. Milk supplies more nutrients in better proportions than most other foods and because it is relatively low in calories, all good weight reduction diets contain milk.

Fallacy: Milk or ice cream and sea food eaten at the same meal will make you sick.

Fact: If both foods are wholesome enough to eat separately, they may be eaten at the same meal or used in combination dishes without harmful effects. Modern refrigeration and better practices regarding food care help keep these perishable foods safe. Oyster stew, scalloped tuna, creamed salmon, and fish chowder are combinations of these two foods in tasty, nutritious dishes.

Fallacy: Acid foods, such as tomatoes, should not be eaten at the same meal with milk.

Fact: Milk curdles as one of the first steps in digestion, when it comes in contact with the stomach's gastric juice. When milk is combined with an acid fruit or fruit juice, a more easily digested curd is formed. Milk and tomatoes combined in cream of tomato soup are an example of this. Such soup is easily digested by any normal individual, even by small children, invalids, and older persons.

Fallacy: Pasteurization destroys much of milk's food value.

Fact: Pasteurization destroys harmful bacteria which may be present in milk.

When milk is pasteurized, the only significant change in nutritive value is a small loss of vitamin C. As the amount of this vitamin present in milk is very small, milk cannot be depended upon as a source of this nutrient.

Fallacy: Certain stored or fermented milks, such as yogurt and Bulgarian sour milk, have special properties and values that ordinary milk does not have.

Fact: The nutritive value of treated milks will never be greater than the milks from which they are prepared. Sour and fermented milks form relatively small curds and are readily digestible. Physicians sometimes prescribe these milks in cases of under-nutrition, where digestive capacity is below normal, in intestinal indigestion, in cases of diarrhea, and when insufficient acid is secreted in the stomach.

These sour or fermented milks have a decided disadvantage for those who secrete excessive amounts of acid in the stomach because they aggravate the condition.

People with normal digestive capacity and acid secretion do not need acidified milk.

Fallacy: A low calorie milk drink as a substitute for meals is the most effective means of losing or controlling weight.

Fact: An excerpt from a statement of American Medical Association follows: "Any satisfactory weight reduction program should result in a reasonable and steady loss of weight until some lower and more desirable weight is obtained. This, then, should be achieved without the use of crash diets, or bizarre preparations. In most cases of obesity, dietary regulation is necessary after attainment of a more desirable weight."