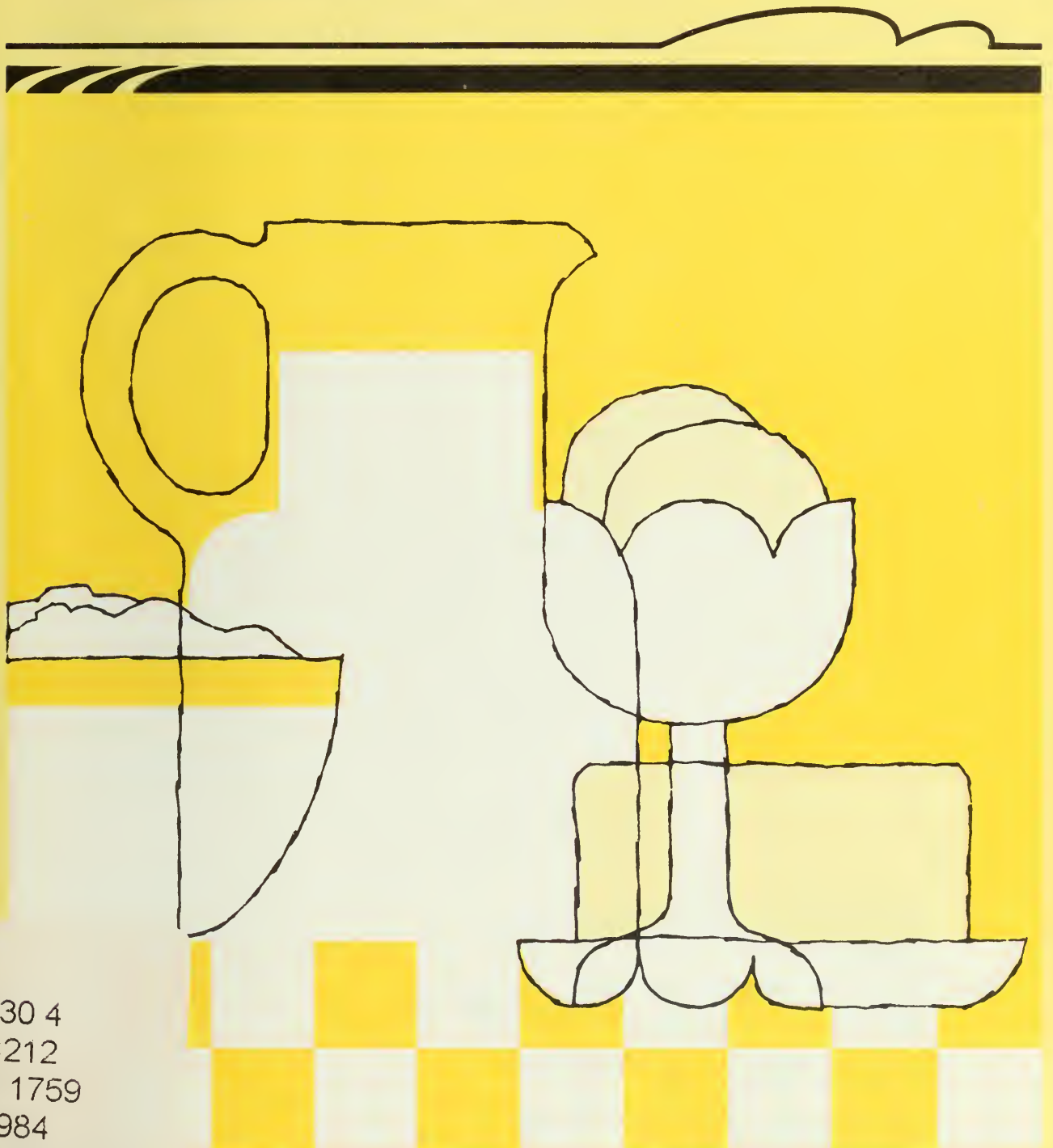


Making dairy products at home



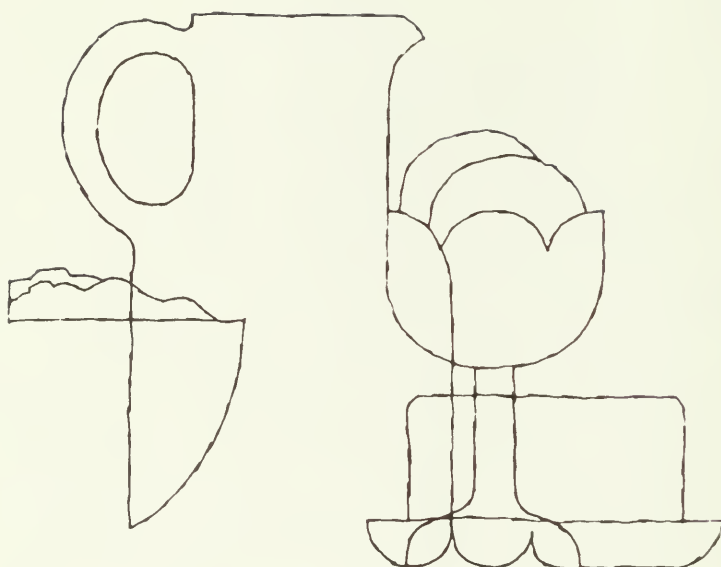
Agriculture
Canada

Publication 1759



630 4
C212
P 1759
1984
(1985 print)
c.2

Canada



PUBLICATION 1759/E, available from
Communications Branch, Agriculture Canada,
Ottawa K1A 0C7

©Minister of Supply and Services Canada 1984
Cat. No. A73-1759/1984E ISBN: 0-662-12994-6
Printed 1984 Reprinted 1985 25M-3:85

Également disponible en français sous le titre
Les produits laitiers maison.

This publication replaces Publication 1669,
Home-made dairy products.

Making dairy products at home

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Dairy products are a vital part of our diet. Milk, cheese and yogurt give us calcium, riboflavin, vitamin A and some B vitamins. The milk you buy at the store also has vitamin D added, making it one of the few common sources of this vitamin. Butter, ice cream and sour cream contain nutrients as well, but because of their energy content, should be eaten with moderation.

Not so long ago, people made their own dairy products at home using fresh milk. Today, they can buy all kinds of products manufactured by large commercial dairies.

However, many people are showing a renewed interest in homemade foods. They want to control the ingredients and rediscover the taste of the original products. They also find that dairy products are fun to make.

Some products require a bacterial culture, or “starter”, to produce acid in the milk and cream and to impart the right flavor and aroma. For simplicity, the products in this publication use cultured buttermilk and plain yogurt as starters; both are available at retail stores.

You can buy special home equipment, such as yogurt makers and ice cream makers. However, most of the methods in this publication use equipment and utensils you will already own.

PASTEURIZATION

Pasteurization is the heat treatment given milk and cream to destroy harmful microorganisms, including those that cause tuberculosis, brucellosis and typhoid. Pasteurization also destroys microorganisms that could compete with bacterial cultures used to make cultured products. All milk and cream sold in retail stores is pasteurized.

The methods described all use pasteurized milk. If the milk is fresh from the farm and has not been heat treated, it may present risks; pasteurize it before use.

Pasteurize milk and cream in a double boiler. Heat milk for cheese to 63°C, and maintain that temperature for 30 minutes. Use 82°C for milk and cream that will be made into other products. Stir frequently to prevent burning. Skim off the skin that forms on the surface as it causes lumpiness in fermented products.

After heating, cool the milk or cream quickly in cold water and refrigerate it immediately to 5°C or below. Never mix warm milk or cream with that already in storage — cool it first. Take care not to contaminate it with raw-milk utensils, hands, or anything else.

You can use low direct heat to pasteurize milk in a pan, but you have to stir constantly; the double boiler is better. To make larger quantities of dairy products, small electric pasteurizers are available.

TIPS FOR SUCCESSFUL PRODUCTS

Use clean utensils and dishes.

Make sure that buttermilk and yogurt used as starters contain active bacteria. If this information is not shown on the label, choose the freshest commercial products available; refer to the “best before” date.

Scald milk as required in the recipe. In some cases, scalding accelerates or improves the reaction between the acid and proteins. In other cases, heat destroys bacteria that could cause unpleasant flavors.

Observe the temperatures and lengths of time recommended in the methods of preparation.

Store the products covered.

BUTTER

Butter is produced by churning thick cream. The movement causes the fat globules to pack together and separate from the “water”, called buttermilk. The butter is then washed and salted to extend its storage life.

Butter making for kids

250 mL cold whipping cream

1.5 L ice water

0.5 mL salt

Pour whipping cream into clean jar with tight-fitting lid. Shake jar until butter forms (about 50 min). Pour off buttermilk. Wash butter with cold water. Press butter against side of jar or bowl with spatula to work out excess liquid. Pour off water and repeat until water remains clear. Be sure all excess water is worked out. Add salt and mix well. Makes about 125 mL.

Electric mixer butter

1.5 L whipping cream

5 mL salt

Cold water

Let cream stand at room temperature until slightly thickened and mildly sour (about 6 h). Chill in refrigerator. Beat at high speed until flakes of butter begin to form, then at low speed until butter separates from buttermilk. Scrape bowl with spatula occasionally. Pour off buttermilk. Wash butter with cold water. Press butter against side of bowl with spatula to work out excess liquid. Pour off water and repeat until water remains clear. Be sure all excess water is worked out. Add salt and mix well. Store, covered, up to 1 week in refrigerator or 3 months in freezer. Makes 750 mL (about 650 g).

Clarified butter

Clarified butter is melted butter with the milk solids removed. It is less likely to burn when used for frying. Clarified butter is often used to prepare seasoned butters.

250 mL (250 g) butter

Melt butter slowly. Remove from heat and let stand until milk solids settle to bottom (about 7 min). Remove foam, then skim the clear butter from top. Makes about 200 mL.

Whipped butter (using skim milk powder)

Whipped butter is made by incorporating air into regular butter. The air increases the butter's volume and gives it a softer consistency for better spreading. Whipped butter is not suitable for cooking. Use it if you are preparing a large number of sandwiches.

75 mL instant skim milk powder	250 mL butter,
125 mL water	softened (about 250 g)

Combine skim milk powder and water. With electric mixer, whip butter until creamy and gradually beat in skim milk thoroughly (about 5 min). Makes about 400 mL.

CRÈME FRAÎCHE

This product, peculiar to French cuisine, was traditionally made by allowing heavy cream to ferment naturally until it thickened and became fairly firm. Because it required unpasteurized cream, this method is not recommended today.

It is possible to prepare a crÈme fraîche very much like the original product in flavor and consistency. The slightly acid taste complements fresh, cooked or processed fruit. CrÈme fraîche is also used as a dessert topping.

CrÈme fraîche

250 mL whipping cream
250 mL sour cream

Gradually add whipping cream to sour cream, beating only until smooth. Cover and let stand at room temperature until very thick (8 to 12 h). Stir cream lightly with fork. Cover and refrigerate at least 24 h before using. May be stored up to 7 days. Makes 500 mL.

Maple peach dessert

2 cans (540 mL each)	175 mL crÈme fraîche
peach halves, well drained	25 mL chopped nuts
150 mL maple syrup	

For each serving, place two peach halves in dessert dish. Drizzle with 25 mL maple syrup. Top each half with about 15 mL crÈme fraîche. Garnish with nuts. 6 servings.

ICE CREAM

Ice cream is one of the most popular frozen desserts and its commercial preparation has become highly sophisticated. It is made from a mixture of cream (or cream and milk), sugar, flavoring, and (sometimes) eggs. The cream gives the product a rich flavor and smooth texture. The fat in the cream and the sugar help to form small ice crystals. Air incorporated into the mix gives a light texture and increases the volume.

There are two methods of preparing ice cream, distinguished by whether the mix is stirred or not.

The *stirred method* uses a beater in an ice cream maker to incorporate air bubbles. At the same time, the mix is frozen in the ice cream maker using ice and coarse salt. The salt controls the temperature and speed of crystallization, ensuring the formation of small ice crystals. It is important to use the amount of salt specified in the recipe. Excessive salt, for example, results in a compact product, since the mix freezes too quickly, allowing little time for the air to become incorporated. For best results, follow the manufacturer's instructions on how to use the ice cream maker.

The *unstirred method* incorporates air by adding beaten eggs and whipped cream. These ingredients let small ice crystals form to produce a fine texture. The mix is frozen in an ordinary freezer so you don't need an ice cream maker.

Vanilla ice cream

500 mL whipping cream	7 mL vanilla
175 mL sugar	6 L crushed ice
0.5 mL salt	250 mL coarse salt
500 mL table cream	

The day before, heat 250 mL whipping cream to 45°C over hot water. Add sugar and salt; stir until dissolved. Chill. Add remaining whipping cream, table cream and vanilla. Refrigerate overnight. Pour ice cream mixture into machine and cover tightly (see manufacturer's directions for operating ice cream maker). Combine ice and salt then pack into machine. Let stand 5 min. Churn until firm. Pour into covered container and store in freezer until very firm (about 4 h). Makes about 1.4 L.

STRAWBERRY ICE CREAM Use 250 mL fresh strawberries, crushed OR 225 g frozen strawberries, thawed and crushed. Add to ice cream mixture just before churning.

MAPLE ICE CREAM Use 200 mL maple syrup in place of sugar.

PUMPKIN ICE CREAM Use 175 mL canned pumpkin, 0.5 mL allspice and 2 mL cinnamon. Add to ice cream mixture just before churning.

Freezer vanilla ice cream

Half 7 g envelope unflavored gelatin	0.5 mL salt
25 mL cold water	1 slightly beaten egg
250 mL whole milk	5 mL vanilla
100 mL sugar	250 mL whipping cream

Soak gelatin in cold water and set aside. Scald milk. Add sugar and salt; stir until dissolved. Blend small amount of hot milk into egg, then stir egg into remaining hot milk. Add softened gelatin. Stir and cook over hot water until slightly thickened (15 to 20 min). Remove from heat and add vanilla. Chill until consistency of egg white (about 1 h). Beat until fluffy. Whip cream until barely stiff. Beat together whipped cream and custard until smooth. Pour into a shallow pan and freeze until firm (about 3 h). 6 to 8 servings.

SOUR CREAM

People used to make sour cream by letting its natural fermenting bacteria sour it naturally. Since pasteurization destroys most of these organisms, naturally soured cream today often has an unpleasant flavor. The dairy industry produces commercial sour cream by adding a bacterial culture. The result is a delicious product with just the right degree of acidity.

You can make sour cream the same way at home, using cultured buttermilk as a starter.

Sour cream

500 mL table cream
25 mL cultured buttermilk

Combine cream and buttermilk in stainless steel or glass bowl. Cover and let stand undisturbed at room temperature until set (20 to 24 h). Refrigerate. Makes about 500 mL. Store in refrigerator up to 3 days.

COTTAGE CHEESE

Cottage cheese is made from skim milk by adding bacterial culture and/or an acid ingredient. The culture causes the milk to coagulate and form a curd and whey (liquid). Since its curd is unripened, cottage cheese falls into the category of fresh cheeses. It has a slightly acid flavor and a whitened milky appearance. To make a creamy cottage cheese, add table cream.

The method below uses cultured buttermilk as the starter. You'll also need a stainless steel container, a long knife, a small baking rack, a large pan, a thermometer, a colander and cheesecloth.

Cottage cheese

5 L skim milk	250 mL table cream
125 mL cultured buttermilk	(optional)
3 mL salt	

After skim milk and buttermilk come to room temperature (21°C), combine in a stainless steel container. Let stand at 21°C until set (20 to 24 h). The curd is ready to cut when a soft gel forms and a small amount of liquid (whey) appears on the surface. Using a long knife, cut curd one direction into 1 cm strips and then cut the other direction to make 1 cm cubes, holding the knife at an angle. Let stand 10 min. Set the container of curds on a rack in a large pan of water. Slowly heat to 60°C in 1 h, stirring every 5 min. Hold at 60°C for 1 h more, stirring frequently. At this point the curds will be firm. Line strainer with four layers of cheesecloth, then pour boiling water through. Put curds in strainer and let drain. Rinse curd with cold running water to reduce acidity (about 10 min). Let drain until all whey is out (about 15 min). Add salt; combine with table cream if desired. Makes 1.5 L.

QUESO BLANCO

Queso blanco (Latin American white cheese) is a fresh cheese with a creamy texture and slightly acid taste. Unlike cottage cheese, it is made from whole milk. Vinegar is used to coagulate the milk proteins.

You will need a thermometer, a colander and some cheesecloth.

Queso blanco

2 L whole milk
50 mL vinegar

Scald milk to 85°C. Remove from heat and add vinegar. Let stand at room temperature for 5 h. Line strainer with four layers of cheesecloth, then pour boiling water through. Put cheese in strainer and let drain for 1 h 45 min. Refrigerate in a covered container. Makes about 500 mL.

Queso blanco spread

250 mL queso blanco	5 mL dried parsley
25 mL mayonnaise	1 mL Worcestershire sauce
25 mL finely chopped onion	0.5 mL garlic salt
15 mL finely chopped stuffed olives	0.5 mL cayenne pepper

Combine ingredients and blend well. Store overnight before serving. Makes about 250 mL.

YOGURT

To make yogurt at home, you need a commercial starter or plain yogurt containing active bacteria. If you use commercial plain yogurt, it must not contain starch or gelatin and should not be pasteurized after culturing. Homemade yogurt can be used if it is no more than 5 days old.

You will need a thermometer, canning jars with lids, plastic film, and a large pan with cover.

Yogurt

500 mL whole, 2% or skim milk	500 mL water
300 mL instant skim milk powder	125 mL fresh plain yogurt

Scald milk to 85°C. Blend skim milk powder and water until smooth but not foamy. Add to scalded milk and cool to 45°C. Stir in yogurt. Pour mixture into warm jars. Seal with plastic wrap, then lids. Place in a large pan of lukewarm water and cover. Set pan in cold oven that has only the oven light on, and do not disturb until set (about 3 h). Refrigerate. Makes about 1.2 L.

SERVING SUGGESTION Use 75 mL mashed canned, fresh or frozen fruit for each 250 mL plain yogurt. Add sugar to taste. Let stand 2 h to blend flavors.

MILK POWDER

Skim milk powder is made from pasteurized fresh milk that has had the fat removed. It comes in both *instant* and *noninstant* forms.

To reconstitute milk from the instant powder, follow the manufacturer's instructions. For the noninstant type, combine one part powder and five parts lukewarm water (by volume) in a jar and shake until dissolved (1 to 2 min). Chill immediately, covered, in the refrigerator.

Buttermilk powder is also available; reconstitute it the same way as noninstant skim milk powder.

Skim milk powder can be used to prepare whipped topping for desserts. Add less water to the powder than if you were reconstituting the milk; the mixture will be thick enough to retain air bubbles after beating. The stability of the mixture is increased by adding lemon juice.

Whipped topping

125 mL cold water	Dash salt
15 mL lemon juice	50 mL sugar
175 mL instant skim milk powder	1 mL vanilla

Combine water, lemon juice, skim milk powder and salt. Beat until mixture stands in firm peaks (about 8 min). Gradually beat in sugar, then vanilla. Chill. Makes about 1 L.

Agriculture Canada would like to thank the Nova Scotia Department of Agriculture for its cooperation in developing some of the recipes in this publication.



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KITCHEN METRICS

VOLUME

Use metric measures for metric recipes. Measures are marked in millilitres (mL) and are available in the following sizes:

1000 mL = 1L

500 mL

250 mL



250 mL

125 mL

50 mL



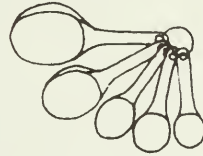
25 mL

15 mL

5 mL

2 mL

1 mL



TEMPERATURE

Most commonly used oven temperatures

°C replaces °F

100 200

150 300

160 325

180 350

°C replaces °F

190 375

200 400

220 425

230 450

Refrigerator temperature: 4°C replaces 40°F

Freezer temperature: -18°C replaces 0°F

MASS

1 kg (1000 g) is slightly more than 2 pounds

30 g is about 1 ounce

LENGTH

1 cm (10 mm) is slightly less than 1/2 inch

5 cm is about 2 inches

PRESSURE

Pressure for pressure cookers and canners is measured in kilopascals (kPa) instead of pounds per square inch (PSI).

kPa replaces PSI

35 5

70 10

100 15

