The magazine of modern homesteading

COUNTRYSIDE

& Small Stock Journal

Home Dairy
e-edition

Home Dairy Projects

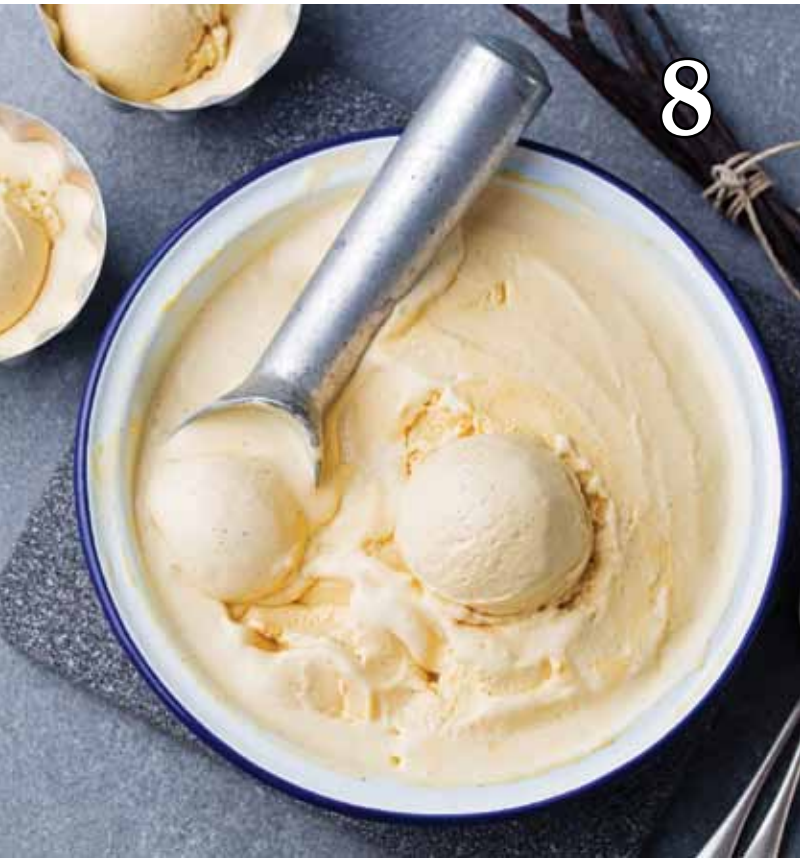
From Farm to Fridge

From-Scratch
Recipes for:
~ Yogurt
~ Cheese
~ Ice Cream

Plus
How to Safely
Can Milk!

www.countrysidenetwork.com

Contents



CHEESE

JOIN US ON OUR SOCIAL CHANNELS

Connect and share ideas with Countrysiders like you and watch for new stories on our social channels!

Facebook.com/iamcountryside

Instagram.com/iamcountryside

Pinterest.com/iamcountryside

Include #iamcountryside for a chance to have your pics shared on our feed.

Which Recipe Will You Start First?

MARISSA AMES
Editor,
Goat Journal

Hello,

I'm Marissa Ames, editor of *Goat Journal*, your magazine for "all things goat." I'm also a home cheese maker and dairy-crafter. And I'm thrilled to guest-edit this edition of *Countryside & Small Stock Journal*.

Though I grew up in a farming community, I never learned to make anything other than peaches and cream with the raw, fresh milk from my uncle's dairy. Then I entered the urban world and, like many urbanites, never imagined I could make more than a bowl of cereal with store-bought milk.

My first dairy-crafting experience started when I read an article about making yogurt in a slow cooker. It made sense when I learned about temperatures and beneficial bacteria. Nervously, I tried my first batch. Success!

I was hooked.

Next came homemade frozen yogurt: I cultured whole milk, strained out whey, then I added it to the ice cream machine with sugar, vanilla, fresh overripe pineapple, and a little rum flavoring. Pineapple-rum frozen yogurt is amazing.

Before I even owned my first goat, I had created yogurt, sour cream, butter and buttermilk, ice cream and frozen yogurt, paneer and ricotta, mozzarella, cream cheese, chèvre, and cheddar all from supermarket milk. All in my own kitchen. Owning dairy animals has opened up another world and I'm filling my fridge with my creations.

I'm excited to share some of my favorite dairy projects plus great information about goat milk nutrition. Do you already make cheese and yogurt? Or is this your first dairy-crafting adventure? Enjoy this edition of *Countryside and Small Stock Journal.* Please share your experiences at countrysidemag@gmail.com. And come visit me over at *Goat Journal*! We would love to hear from you.

Thank you,

Marissa Ames

Our Philosophy

At *Countryside*, our purpose is to inspire self-reliant living on any level.

We acknowledge that the path to self-sufficiency is as unique as the person who accepts the journey.

We strive to strengthen the homesteading movement by sharing the diverse voices and knowledge of today's practioners.

We teach our readers how to grow and raise their own food; build, fix and craft with their own two hands; and walk as gently on this planet as possible.

www.countrysidenetwork.com

Contact Us:

Phone: 970-392-4419

Fax: 1-715-785-7414

Address: P.O. Box 566, Medford, WI 54451

Advertising office: csyadvertising@tds.net

Editorial office: editor@countrysidemag.com

Customer service/book orders: customerservice@countrysidemag.com

COUNTRYSIDE

Home Dairy
e-edition

Countryside & Small Stock Journal
Includes Small Stock Magazine Founded 1917 by Wallace Blair and Countryside Magazine Founded 1969 by Jd Belanger

EDITORIAL
Steph Merkle, Content Director
smerkle@countrysidemag.com

Pam Freeman, Editor
countrysidemag@gmail.com

Samantha Ingersoll, Ann Tom
Editorial Assistants

CIRCULATION & MARKETING
Ellen Grunseth, Marketing Director
egrunseth@countrysidemag.com

ADVERTISING
Alicia Soper, Advertising Director
asoper@countrysidemag.com
(715) 748-1388

Kelly Weiler
kweiler@countrysidemag.com
(715) 748-1389

Sue Lapcewich
slapcewich@countrysidemag.com
(970) 392-4436

GENERAL MANAGER
Mike Campbell
mcampbell@countrysidemag.com

Countryside's Main Homestead
Countryside
P.O. Box 566, Medford, WI 54451
www.countrysidenetwork.com

Subscriptions (U.S. funds):
$24.99 per year for all-access

Countryside Subscriptions
P.O. Box 1848, Carson City, NV 89702
970-392-4419

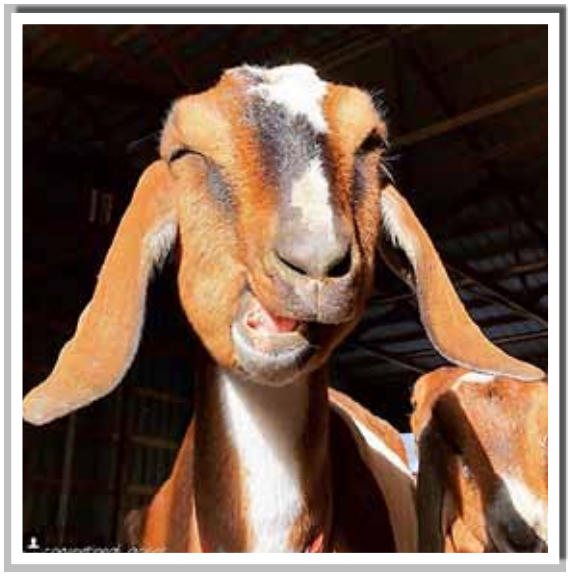
Countryside & Small Stock Journal (ISSN 8750-7595; USPS 498-940) is published bi-monthly by Countryside Publications, P.O. Box 566, Medford, WI 54451. Periodicals postage paid at Medford, WI and additional mailing offices.

POSTMASTER: Send all UAA to CFS.
(See DMM 707.4.12.5);
NON-POSTAL AND MILITARY FACILITIES: Send address corrections to Countryside Subscriptions,
P.O. Box 1848 Carson City, NV 89702

countrysidenetwork.com/daily/lifestyle/home-dairy/how-do-you-make-sour-cream/

Share Your Voice

Being part of the *Countryside* community on social media connects you to homesteaders like you!



by @unconventional_acres: Haaaayyyy! It's too bright! Somebody turn down the light!

countrysidenetwork.com/daily/lifestyle/home-dairy/homemade-buttermilk-recipe-2-ways/

INSTAGRAM
@iamcountryside

FACEBOOK
@iamcountryside

PINTEREST
@iamcountryside

How to Can Milk

By Mary Jane Toth, Mighigan

While frozen milk will taste more like fresh, it takes up a lot of space in the freezer. It costs money and energy to keep it frozen. Canning milk is one way to preserve your milk and save energy at the same time. It will keep for a long time on the shelf. Canned milk will taste like any canned milk available in the grocery store. It will not be suitable for drinking, but will work great for making soups, sauces, gravies, puddings, fudge, etc. I like to have at least 100 quarts and a few pints put away so that, when I dry off my does before kidding, I have enough canned milk to get by until they freshen again.

In my book *Goats Produce Too!*, I have included two methods of canning milk: hot water bath method and pressure canning.

Hot water bath canning is not a recognized method or USDA approved method for canning milk. It is a low acid food and the biggest fear is contamination with botulism. I personally never had a problem with it because we never drank the canned milk, and only used it for cooking. Therefore everything we made with the canned milk was always cooked at boiling temperatures. However, because I don't want to promote a method that could prove risky for some people, I recommend that you use a pressure canner so that you can get the milk to a high enough temperature to kill any harmful bacteria.

When canning milk, it is important to only use fresh milk. Do not try to can milk that you have stored in the refrigerator for a few days. Older milk will be more acidic and there is a risk that it could curdle at the high temperatures required in a pressure canner.

EQUIPMENT NEEDED

1. Pressure canner.
2. Quart or pint jars.
3. Canning lids with rings.
4. Jar lifter, to help you get the hot jars out of the canner.

INSTRUCTIONS

- Put water in the pressure canner to a depth of 2 1/2" and place on the stove burner.
- Fill clean jars with fresh milk, leave 1/2" head space, make sure you don't spill any milk on the rim of the jar and if you do, be sure to wipe it off.
- Place a lid on the jar, screw on the ring, and put into the canner.
- Once the canner is filled, put on the lid, tighten it down, and turn on the heat.
- As the canner gets hot and begins to steam, let it exhaust steam for at least 10 minutes before closing the exhaust nozzle.
- Watch the pressure gauge. If your canner has a different setup, follow the manufacturer's instructions. It can take up to an hour for the pressure to reach 10 lbs. Once the pressure has reached 10 lbs., turn off the heat and allow the canner to cool a long time before trying to open it. I open the exhaust valve and if no more steam escapes, then it is safe to open my canner.
- Lay a towel on your countertop; carefully remove hot jars from the canner and place on the towel. Jars should not touch each other. Allow to cool for 24 hours before checking to make sure they are sealed and moving them to storage. Label them with the date the milk was canned. Milk will keep for 1-2 years or more if stored in a cool, dark place.

Note: If you live in a high altitude area you need to bring the canner to 15 lbs. pressure.

It is normal for the milk to turn a slight tan color, as the milk sugar will darken at high temperatures. The cream will rise to the top; just shake well before using.

Most canning recipes will say that you should use sterilized jars. There are various ways to sterilize the jars. The dishwasher is good, especially if you have a high heat setting. They can be washed in hot soapy water, rinsed well, and filled with boiling water. Another method is to place the jars in a hot oven for several minutes. Having said all that, I usually just wash in hot soapy water or use my dishwasher. The high heat of the pressure canner permeates inside and out.

Before filling the clean jars with your milk, run your finger around the rim of each jar to check for nicks or cracks. Discard any jars that are not smooth and free of defects.

Place your canning lids in a pan and pour boiling water over them. Let them soak in the hot water while you are filling your jars. I don't worry about sterilizing the rings as they do not come in contact with any of the milk.

Keep in mind that this whole process will usually take a good hour for the pressure to build up to 10 lbs. and another 30-60 minutes for the canner to cool enough to open it up.

Summertime Calls for Goat Milk Ice Cream

By Mary Jane Toth

Ice cream using whole goat milk is fantastic. However, plan to eat it up, as it will freeze hard as a rock and will not be easy to dip. Using half cream and half whole milk will make an ice cream that will not freeze so hard and it will be easy to scoop, just like the store-bought stuff.

I developed an easy way to make ice cream without the use of an ice cream freezer while still using whole goat milk. You can have ice cream in an instant. I came up with this idea when my kids were little and wanted ice cream on a moment's notice. You will find my recipe for Instant Ice Cream Cubes below.

All the sherbet recipes are delicious. Because of the high sugar content and the use of Jell-O, these recipes will remain soft enough to dip beautifully. My all-time favorite is the Lemon Orange Ice Cream.

Goat Milk Ice Cream Recipes

BUTTER PECAN ICE CREAM

2 cups goat cream

1 cup brown sugar

2 cups goat milk

1 teaspoon vanilla extract

2 tablespoons butter

1/2 cup toasted chopped pecans

Combine goat milk, sugar, and butter in a saucepan. Cook over low heat, stirring constantly until mixture bubbles around the edges of the pan. Cool. Place mixture into ice cream canister. Stir in goat cream and vanilla. Freeze as directed. Stir in chopped toasted pecans immediately after freezing.

CHOCOLATE ICE CREAM

2 cups whole goat milk

1 teaspoon vanilla extract

1 and 1/2 cups sugar

2 cups goat cream

1/2 cup baking cocoa

Combine goat milk, sugar, cocoa powder, and vanilla extract in a blender. Blend until smooth. Stir in the goat cream and freeze.

LEMON ORANGE ICE CREAM

1 pint goat cream

1 and 1/2 cups lemon juice or 6 freshly squeezed lemons

3 and 1/2 cups sugar

3 and 1/2 cups orange juice, or 7 freshly squeezed oranges

1 quart whole goat milk

In a large bowl, combine juices, sugar, cream, and milk. Mix well. Pour into an ice cream freezer and process. This batch fits into a 4 quart ice cream freezer. Makes 2 quarts of tangy citrus ice cream.

STRAWBERRY ICE CREAM

2 cups goat milk

1 teaspoon vanilla extract

2 cups goat cream

2 cups strawberries, fresh or frozen

1 cup sugar

Place crushed strawberries in the ice cream canister. Stir in remaining ingredients, stirring to mix well. Freeze as directed.

VANILLA ICE CREAM

2 cups goat milk

1 cup sugar

2 cups goat cream

1 teaspoon vanilla extract, pure is best

Combine all ingredients in ice cream canister. Stir thoroughly to dissolve the sugar. Freeze as directed.

INSTANT ICE CREAM CUBES

2 eggs

2 teaspoons vanilla extract

1 cup sugar

1 quart goat milk; add 1/2 cream if desired

Mix all ingredients together in blender. Pour into ice cube trays and freeze. When frozen, remove from trays and place in freezer bags or containers to store.

To make instant ice cream, take out as many cubes as desired and place into a blender. Add enough goat milk to blend until smooth and thick, like fresh made ice cream. Don't add too much milk, or you'll have a milkshake instead of ice cream. To thicken, add more cubes and blend.

Note: Want flavored instant ice cream? Reduce the amount of milk or cream called for in the recipe by half. Use the full amount of all other ingredients. Freeze in ice cube trays. Use as described in recipe above.

Goat Milk Sherbet Recipes

LIME SHERBET

2 cups whole goat milk

1 3oz package lime Jell-O

2 cups goat cream

1 teaspoon grated lime zest

1 cup sugar

3/4 cup lime juice, fresh or bottled

In a saucepan, add Jell-O to lime jouice. Heat to boiling, stirring to dissolve Jell-O. Remove from heat; stir in sugar and grated lime zest. Allow to cool. Stir in goat milk and cream. Freeze as directed for ice cream.

ORANGE SHERBET

1 cup water

1 quart whole goat milk

1 and 1/2 cups sugar

1 3oz. package orange Jell-O

1 package orange Kool-Aid, unsweetened

Combine all ingredients except the milk in a saucepan. Bring mixture to a boil. Remove from heat, cool to room temperature. Stir in goat milk and freeze as directed for ice cream. This is just like the store bought kind!

TANGY CITRUS SHERBET

3 cups whole goat milk

1 cup sugar

2 cups orange juice

Combine all ingredients in an ice cream canister. Stir to dissolve the sugar. Freeze as directed for ice cream.

HOW TO USE AN ICE CREAM FREEZER

• Set ice cream canister securely into bottom of ice cream freezer.

• Fill canister 1/2 to 2/3 full with ice cream mixture. Do not overfill. Allow room for expansion during freezing process.

• Insert paddles and attach lid to canister.

• Pour 1/2 to 1 cup of cold water into the bottom of the ice cream freezer. Alternate layers of ice and salt until you reach the top of the canister. On average, you can expect to use about 1/4 cup of salt per 1 cup of ice. Use course or rock salt; do not use table salt.

• Pour a small amount of cold tap water over the whole layer of salt and ice. Attach the crank or motor unit to the freezer. Begin the freezing process by turning the hand-crank or starting the motor on the ice cream maker. Hand-crank models will usually take 30 minutes. Electric freezers usually take 20 minutes.

• The ice cream is ready to cure when the crank becomes hard to turn, or the motor begins to toil heavily.

• Remove the crank or motor. Lift the lid and paddles. Scrape any ice cream off the paddles. Put the lid back on canister and pack the tub with more ice.

• Cover entire unit with newspapers or old blankets to insulate. Leave ice cream covered for 2-3 hours to cure. Ice cream can be eaten without curing, but allowing it to cure will give it a smoother texture.

HELPFUL HINTS FOR MAKING ICE CREAM

• To make the best ice cream, use half milk and half cream. You will need to separate goat milk with a cream separator or save up enough by skimming off the top. Cream keeps the ice cream smooth and easy to scoop when frozen.

• If you do not have a cream separator, whole goat milk can be used. When eaten fresh, it will be soft and smooth. However, the ice cream will become super hard when stored in the freezer. This problem can be worked out. (See next tip.)

• If the ice cream becomes super hard when frozen, put it in a blender and add a little whole goat milk. Blend until smooth again.

• Freeze leftover ice cream in ice cube trays. Remove cubes from trays when frozen and store in plastic bags or containers. Use for individual servings, using the blender tip above to soften the ice cream.

• If you did use half cream and half milk as recommended, you can freeze any leftover ice cream in bulk containers and scoop out as needed.

• Add fruits, nuts, or other additions at the end of the freezing process to prevent them from settling to the bottom of the ice cream.

• If you do not have enough goat milk cream, you can substitute with commercial cream.

Toppings For Ice Cream

BUTTERSCOTCH SAUCE

2 cups sugar

1/2 cups butter

2 cups brown sugar

1 and 1/2 cups goat milk

2 cups light corn syrup

2 teaspoons vanilla extract

2 cups water

1 can sweetened condensed milk

Combine sugars, syrup, and water in a large saucepan. Bring to a boil, reduce heat, and simmer for 10 minutes. Be careful that the mixture does not boil over. Add condensed milk, goat milk, butter, and vanilla extract. Beat well and store in refrigerator.

Substitution: 2 and 1/2 cups of cream = 1 can sweetened condensed milk.

HOT FUDGE SAUCE

2 cups sugar

1/2 cup baking cocoa

1 teaspoon vanilla extract

3/4 cup light corn syrup

1/2 cup butter

1 tablespoon flour

1 cup goat milk

Thoroughly mix sugar, flour, and cocoa together. Add the corn syrup and the goat milk. Bring to a boil. Reduce heat and simmer for five minutes. Stir often. Remove from heat and stir in butter and vanilla; beat with a spoon. Serve warm over ice cream. Sauce can be heated in the microwave. Store in the refrigerator.

Infant Thrives on Homemade Goat Milk Formula

Harrison thriving on raw goat milk.

By Angela von Weber-Hahnsberg

It was a mother's nightmare. Jennifer had contracted meningitis during her pregnancy, and her son was born premature, at just 29 weeks. Weighing only two pounds, he was in desperate need of his mother's milk — but all Jennifer could produce was one ounce every few hours. When he was finally released from the NICU at four months old, the doctors sent him home on oxygen, with a grim prognosis: chronic lung disease, and almost constant hospital visits over the next 12 months.

Out of desperation, Jennifer spent hours online, searching for something that might help her son. Finally, she stumbled across the website of the Weston A. Price Foundation, an organization that promotes a healthy, natural diet — and shares recipes online for homemade raw milk baby formula.

Jennifer was willing to try anything, so she bought some raw goat milk from Split Creek Dairy in Anderson, South Carolina, and switched her baby from commercial formula to her new homemade concoction.

Soon afterward, he was weaned off the oxygen.

In fact, he was so healthy during the next 10 months that his doctors were shocked. He caught a cold only once, from Jennifer, and is now an active, playful 14-month-old, with only three doctors following him, down from the nine he started out with.

This is only one of the myriad gushing testimonials on the Weston A. Price Foundation website. Several pages are even dedicated solely to baby photos sent in by grateful parents of little ones who have been helped by the homemade formula or other dietary recommendations on the site.

So who was Weston A. Price? And what exactly does this organization advocate?

Interestingly, Dr. Price was a dentist. In the 1930s, he began a series of studies to find the major factors contributing to good dental health. For 10 years, he travelled from his native Cleveland to remote places all over the world, seeking out isolated tribes not yet influenced by modern Western culture. What his research led him to believe was that dental problems, from cavities to crooked teeth,

I saw a difference in him right away — he started gaining weight very fast. He drank his raw goat milk formula until he was 13 months old.

Little Harrison had lost 18 percent of his body weight while breastfeeding due to a thyroid problem with his mother, which left her devastated. Luckily he bounced back quickly when fed raw goat milk.

were caused by poor nutrition and not genetics. Tribal people still consuming traditional diets had strong, straight, beautiful teeth, while those who had abandoned those natural, nutrient-rich diets in favor of modern, processed Western food had all the same dental woes as Westerners.

Especially of interest to Dr. Price was the fact that pregnant and lactating mothers in tribal societies were fed a special diet, with extra nutrients to aid in the growth and development of the child. Armed with his new understanding of the influence of diet on health, he developed a set of guidelines designed to help Westerners imitate the native wisdom of those tribal peoples.

While most of his recommendations are almost common sense these days — eat whole, unprocessed foods, fruits and vegetables, meat from pasture-fed animals — some of them do not resonate with the mainstream Western approach to food. The prime suspect is his recommendation to drink raw milk.

Price's foundation puts a special emphasis on feeding raw milk to infants if breast milk is not an option. Story after story can be found on the website, detailing the life-changing effects homemade raw milk baby formula has had on children around the country.

One such success story comes from Julia McClure of Oregon. Already a raw goat milk aficionado, she drank it all through her pregnancy and even during labor! She breastfed her son, Harrison, for about a month, but as she explains, "I knew instinctively something was wrong. He was always breastfeeding, and every time I took him off, he cried. I called my midwife, and she said he had to be put on formula right away, because he was starving and had lost 18 percent of his body weight. I was devastated."

McClure soon learned that a thyroid problem was to blame for her milk production problems. Already aware of the benefits of raw goat milk, McClure quickly made the connection: "He had one bottle of [commercial] formula, and then I started to think about giving him some watered-down goat milk I had in the fridge."

Searching online for advice, she discovered the Weston A. Price goat milk formula recipe on www.realmilk.com. She immediately made the switch. "I saw a difference in him right away — he started gaining weight very fast. He drank his raw goat milk formula until he was 13 months old."

Stories like McClure's, and Jennifer's, are everywhere on the foundation's website. The health benefits of goat milk, combined with those of the other natural ingredients called for in the recipe, seem to be a godsend to infants battling health issues. These recipes can be found at www.westonaprice.org.

Yogurt Making

No Special Equipment Required

By Tony and Beth Noordmans, Minnesota

Our family loves yogurt — we eat it everyday for lunch; we mix it into our homemade North Woods Dressing; sometimes I even bake with it. We go through six to eight quarts of yogurt a week! This would be a huge dent into my weekly food budget. I didn't want to have to ration yogurt since it is such a great healthy food, so I did some reading and some experimenting and learned how to make my own homemade yogurt — with no special equipment. This process takes a while (about 24 hours) but very little of it is hands-on time; most is just wait time, so once you get the hang of it, it becomes almost second nature. I do it weekly with two little ones running around.

This method is loosely adapted from Katie's method that she shares at www.kitchenstewardship.com, but I'm not nearly as detail-oriented as she is, and I culture my yogurt in a different spot.

Here is your motivation to try this:

1 quart of all natural plain yogurt with live culture (Dannon is one brand) = $3 x 6 quarts a week = $18/week for yogurt

1-½ gallons whole milk = $4.50 + 6 x $0.0625 (starter) = $4.88/week for yogurt

I think I'll take the $13/week savings!

Supplies

- Quart-sized canning jars (Wide mouth are easier to wash.)
- Lids for the jars (Used canning ones work; I prefer the plastic lids.)
- Medium or large stock pot (Depending on how much yogurt you want to make.)
- Starter culture
- Milk
- Tap water
- Stove
- Oven with a light
- Clean spoon
- Candy thermometer (helpful but not necessary.)

Note About Supplies

I use regular pasteurized, homogenized whole milk that is from BGH-free cows. I can get this milk at the local gas station for $6 for two gallons.

For my culture I buy all natural plain yogurt with live culture. I can get it from my local grocery store and the only ingredients are "grade A cultured milk." I buy a quart and freeze it in two ice cube trays (48 cubes), then use one cube per quart when I make yogurt. You can use your current yogurt to culture the next batch but it will eventually stop working — I found that in three to four cycles my yogurt starts to get "runny."

Step 1

Fill the quart-sized jars with milk; leave about one inch head-space.

Place a clean dishrag in the bottom of your stockpot. (This helps prevent the jars from breaking when you heat them.)

Place your jars in your stockpot and fill your stockpot with tap water until about three-fourths of the way up your jars.

First step:
Heating the milk.

Step 2

Heat the stockpot filled with water and the jars of milk over medium to medium-high heat until the milk reaches 175-180 degrees F. Be careful not to heat the water up too fast (high heat) — the jars will break!

Use your candy thermometer or just watch for small bubbles around the edges and a "skin" to form on the top of the milk. The reason you are heating the milk is to kill any unwanted bacteria that has contaminated your milk and to "break apart" the milk proteins so the yogurt will be "store-bought" yogurt consistency and not "runny" or "stringy." This takes about a half hour on my stove but you don't have to watch it closely; even if you forget about it and the milk ends up boiling, it still works! (I've done this!)

After removing the jars from the stockpot, cool the milk to 110 degrees F. Be careful — the jars will be hot!

The heat of the oven light (or pilot light) is enough to keep the culture working.

Step 3

Once the milk has reached 175-180 degrees F, turn off the heat and carefully remove the jars from the stockpot. I use oven mitts with rubber grips on them.

Congratulations, you have just made your own yogurt!

Step 4

Allow the milk to cool until it reaches 110 degrees F. You can speed this process up a bit by placing the jars in cold water — be careful because a drastic temperature change will cause the jars to break! I just let them sit on my counter until they cool. This takes about an hour at my house.

Step 5

Place a cube (or tablespoonful) of starter into each jar. Stir gently. Place lids on the jars and close until just finger tight.

Step 6

Place the jars back into the stockpot, still filled with water. (It should still be warm.) Cover the pot, or not, (I do both) and place the whole thing into your oven with the light on. I've never actually measured the temperature of my oven during this stage but it stays warm enough to keep the water warm and the yogurt cultures active. You want the milk to be around 100-110 degrees F to culture well. You can let your yogurt culture for 8-24 hours.

I usually try to get it ready in the morning, put it in the oven around noon and leave it until the next morning. Some people say that the yogurt will get more "sour" the longer it cultures; I have not noticed a difference. I've also read that the longer you leave it to culture, the more lactose is "used up," so that it is tolerated better by those who are lactose intolerant.

Step 7

Remove your stockpot from the oven and your jars of yogurt from the stockpot. Place the yogurt in the fridge. It will continue to thicken as it cools.

YOGURT

Medicinal Food on the Homestead

By Habeeb Salloum, Ontario, Canada

Cucumber and yogurt salad

The ancient Assyrians appreciated yogurt so much that they called it *lebeny*, meaning "life." The venerable yogis of India mixed yogurt with honey and called it the "food of the gods." Cleopatra bathed in this milk product to give herself a clear and tender complexion, and Genghis Khan fed it to his soldiers to give them courage. One of man's earliest prepared foods, yogurt can claim few equals in the folklore of the medical and culinary arts.

Early in life, I had become familiar with yogurt dishes on our homestead on the western prairies of Canada. From meals and snacks to lunches and all types of dishes containing yogurt, our family's culinary life seemed to revolve around that milk product. However, during that era of my life it was not my favorite food. That was to come later, when I gained wisdom.

"Not again!" I thought to myself as I angrily opened my lunch bag. Mother had this day, as she had for a whole week, made us children *arous bi labana* (a type of sandwich made up of a yogurt paste spread generously on paper thin Arab bread, then rolled into a long cylinder shape). How I envied my schoolmates munching on neat white bread sandwiches. As I moved away to eat my lunch in a semi-hidden corner, I childishly resolved that when I grew up there would be no more *arous bi labana* for me.

Little did I know, in those homesteading days and in fact long thereafter, that the yogurt I once detested is one of the healthiest foods known to mankind. My parents brought with them from Syria a love for this delectable and nutritious dairy product, consumed in the Middle East since the dawn of civilization. Perhaps they did not know its many benefits, but they, as I do now, relished its taste. We ate it almost every day for breakfast and for snacks, and I am now sure that this healthy food with a cultural and medical past was one of the reasons we children were rarely sick during our childhood years.

Modern nutritionists have established that yogurt's reputation as an almost medicinal food is justified. It has been found that it contains a digestive enzyme which prolongs life. Humans naturally produce this enzyme in their childhood but it becomes deficient as they reach adulthood.

It has also been proven that, besides all the healthful elements found in milk, yogurt contains a teeming load of bacte-

ria — about 100 million per gram. These multiply in the intestines and, by getting rid of the accumulated germs, relieve stomach ulcers, dysentery, and promote excellent digestion. When we children had stomach ailments on the farm, our mother's remedy was always yogurt. As far as I can remember, it usually worked!

Much more easily digestible than milk, yogurt is ideal for the aged, pregnant women, children, and the sick. In addition, it is believed that regular eaters of this fermented milk tend to have clear skin and find no problem enjoying a good night's sleep. Also, in a recent study, Japanese researchers have found that eating traditional yogurt reduces the malodorous compounds that cause bad breath.

All types of milk, ranging from reindeer to cow, can be utilized in making yogurt. However, the fat and nutrient values vary depending on whether it is prepared from cream, whole milk, or partly skimmed or skimmed milk, and if it includes additives like fruits or syrups. On the average, 100 grams of regular plain yogurt contains 77 calories and 7.1 g carbohydrates, 5.3 g protein, 3 g fat, 229 mg potassium, 181 mg calcium, 142 mg phosphorus, 75.5 mg sodium, and vitamins B1, B2, and B12.

For those wishing to cut down on the amount of fat, cholesterol, and calories in their diets, yogurt made from skimmed milk is a godsend. In preparing meals, brands labeled low-fat and low-cholesterol can be substituted for mayonnaise, sour cream, or similar products. This will constitute a tremendous improvement in their diets — at times working wonders.

Besides its nutritious value, yogurt is a marvelously versatile and adaptable food. It adds richness, flavor, and an appetizing aroma to a myriad of dishes. The possibilities of cooking with this tangy, cultured milk are infinite. It blends well with cheese, eggs, grains, most types of meats, fruits, vegetables, and makes an excellent marinade. Delicious when flavored with syrups, nuts, herbs, and spices, it enhances and is enhanced by other foods. The gastronomic repertoire of this so-called "milk of eternal life" is endless.

YOGURT DIP

Great when served as a snack food with crackers or pita bread.

4 cups plain yogurt

1 teaspoon sumac (can be purchased from Middle Eastern stores)

1/2 teaspoon dry mint

1/4 teaspoon salt

1/8 teaspoon black pepper

1 tablespoon olive oil

Place yogurt in a cheesecloth bag then tie with a string. Suspend over a receptacle and allow to stand overnight.

Combine remaining ingredients, except oil, in a bowl. Set aside.

Place yogurt on a platter, then spread spice mixture evenly over yogurt. Sprinkle with oil just before serving.

CUCUMBER IN YOGURT *(Khiyar bi Laban)*

Serves 4 to 6

We often had this dish on a hot summer day for lunch, chilled in a pail hung above the water line in our well — our Depression years' refrigerator.

2 cups plain yogurt

1 medium cucumber (6 to 8 inches), peeled and diced in very small pieces

2 tablespoons finely chopped fresh mint

2 cloves garlic, crushed

1/2 teaspoon salt

Place all ingredients in a serving bowl then thoroughly combine. Chill then serve.

BURGHUL AND YOGURT APPETIZER *(Kishkeh)*

Serves about 6

A simple dish favored by both rich and poor, especially in Damascus, *kishkeh* is delicious and healthy.

1/2 cup medium burghul, soaked for 10 minutes in warm water then drained by squeezing out water through a strainer

1 cup plain yogurt

2 cloves garlic, crushed

1 teaspoon finely crushed dried mint

4 tablespoons finely chopped peeled cucumber

Salt and pepper to taste

2 tablespoons finely chopped fresh coriander leaves

2 tablespoons olive oil

Combine all ingredients, except coriander and olive oil, then spread on a platter. Chill, then decorate with coriander and sprinkle with olive oil just before serving.

Burghul and yogurt appetizer

YOGURT AND EGGPLANT APPETIZER *(Badhanjan Matabal bil Laban)*

Serves about 6

Yogurt enhances most dip/appetizers and sauces to which it is added. It gives them a smooth texture and special tang.

1 medium eggplant, about 1 pound

1 cup plain yogurt

2 cloves garlic, crushed

1/2 teaspoon dried crushed mint

1/2 teaspoon salt

1/4 teaspoon black pepper

2 tablespoons chopped fresh coriander or parsley leaves

2 tablespoons olive oil

Place eggplant in an oven, then bake for about an hour or until thoroughly baked. Remove from oven and allow to cool.

Peel and place in a food processor, then add remaining ingredients except coriander or parsley and olive oil. Blend into paste, then place on a platter. Decorate with coriander or parsley then sprinkle with the olive oil just before serving.

YOGURT-POTATO SALAD

Serves about 6

In my view, the use of yogurt in this somewhat different than usual salad gives it its uniqueness.

3 tablespoons olive oil

1 large onion, finely chopped

4 cloves garlic, crushed

2 tablespoons finely chopped fresh coriander leaves

1/2 small hot pepper, seeded and finely chopped

1 teaspoon salt

1/2 teaspoon black pepper

3 large potatoes, about 1 pound, peeled and diced into 1/2 inch cubes

1 cup plain yogurt

Heat oil in a saucepan, then sauté onion over medium heat for eight minutes. Stir in garlic, coriander leaves and hot pepper, then sauté for a few more minutes. Add remaining ingredients except yogurt, then barely cover with water. Bring to boil, then cover. Cook over medium/low heat for 30 minutes or until potatoes are done, then stir in yogurt and serve.

YOGURT SOUP *(Labaniyya)*

Serves 6

When cooking this Syrian/Lebanese soup, precautions must be taken in order that it does not curdle or separate. This is done by gently stirring in one direction until it comes to a gentle boil.

2 eggs, beaten

3 cups plain yogurt

3 cups cold water

2 tablespoons butter

6 cloves garlic, crushed

1 and 1/2 teaspoons salt

2 tablespoons dried crushed mint

Place eggs, yogurt, and water in a saucepan then stir until well blended. Place over medium heat then stir gently until mixture comes to boil. Reduce heat to very low.

Melt butter in a frying pan then add garlic, salt, and mint. Sauté over medium heat until garlic turns golden then stir garlic mixture into yogurt sauce. Remove from heat, then serve hot.

DUMPLINGS IN YOGURT *(Sheesh Barak)*

Serves about 8

During my youth when the cold winter months rolled around, a steaming hot bowl of sheesh barak, diffusing its mouth-watering aroma through our kitchen, has left a lasting impression in my culinary world.

DUMPLINGS:

1 pound fresh or frozen dough, thawed

1 pound ground beef or lamb

2 tablespoons butter

4 tablespoons pine nuts or slivered almonds

1/2 teaspoon salt

1/2 teaspoon black pepper

1/2 teaspoon ground coriander seeds

1/4 teaspoon ground cinnamon

2 medium onions, finely chopped

2 cloves garlic, crushed

YOGURT SAUCE:

2 eggs, beaten

3 cups plain yogurt

3 cups cold water

2 tablespoons butter

2 cloves garlic, crushed

1 teaspoon salt

2 tablespoons dried crushed mint

Form dough into 3/4-inch balls, then cover with a tea towel and allow to rest for 1 hour.

In the meantime, make a filling by stir-frying meat in butter until light brown, then add the remaining dumpling ingredients and stir-fry for 3 minutes.

Roll out dough balls to make circles 1/8-inch thick. Place 1 level teaspoon filling on each circle, then fold dough over filling and pinch edges to seal. Fold in half again to shape dumpling like a thimble and pinch to close. Place dumplings on a greased tray and lightly brown in a 350 degrees F preheated oven, turning them over once, then set aside.

To make sauce, place eggs and yogurt in a saucepan, then stir until well-blended. Add cold water, then stir well. Cook over medium heat and gently stir in one direction until mixture comes to boil, then reduce heat to low.

Place butter in a small saucepan and melt then add the garlic, salt, and mint. Stir-fry over medium heat until garlic turns golden, then stir garlic mixture into yogurt sauce. Place dumplings in sauce, then cover and cook for 25 minutes over medium/low heat. Serve piping hot.

YOGURT CAKE

Eaten alone or utilized as an ingredient in the preparation of other foods, yogurt is enjoyed worldwide by more people than any other dairy product.

1 and 1/2 cups plain yogurt

1/2 cup butter, melted

1/2 cup whipping cream

4 eggs, beaten

1 cup sugar

2 cups flour

2 and 1/2 teaspoons baking powder

1/2 teaspoon salt

1/2 cup honey

1/2 cup water

3 tablespoons lemon juice

Thoroughly combine yogurt, butter, cream, eggs, and sugar then set aside.

Sift flour, baking powder, and salt into the yogurt mixture then stir to make a batter. Place in a well-greased 8 x 11 inch baking pan and let stand for an hour.

Bake in a 300 degrees F preheated oven for about 1 hour or until a toothpick inserted into center of the cake comes out clean.

In the meantime, place honey and water in a pot then bring to boil. Boil for about 5 minutes over medium heat, stirring occasionally. Stir in lemon juice to make a syrup. Remove from heat and set aside.

Remove cake from the oven and allow to cool. Turn over on to a serving platter. Spoon the syrup evenly over the cake and serve warm.

YOGURT DRINK

In the hot lands of North Africa, the preferred beverage to quench one's thirst is similar to this yogurt drink.

4 cups plain yogurt

2 cups water

4 tablespoons melted honey

1/2 teaspoon almond extract

Freshly chopped mint leaves

Place all ingredients, except mint leaves, in a blender; blend for 1 minute. Chill, and decorate with mint leaves before serving.

COUNTRYSIDE NETWORK
PIONEERING THE SIMPLE LIFE

Subscribe today!

Countryside & Small Stock Journal

The magazine of modern homesteading, featuring information on gardening, food preservation, small livestock, poultry, preparedness and self-reliant living.

Goat Journal

The leading magazine that focuses on "all things goat." Regular topics include raising, breeding and marketing goats, along with features and information on making the goat business more profitable and rewarding. Each issue provides timely articles, news, and health information for goat owners.

Backyard Poultry

America's favorite poultry magazine is written for both rural and urban poultry enthusiasts. The magazine features all poultry including chickens, ducks, geese, turkeys and guinea fowl.

sheep!

The voice of the independent flock master, *sheep!* magazine contains informative articles on health, feed and grazing, predator protection and marketing meat and wool products.

Don't forget to download your **FREE GUIDES**!

Helpful free guides are available, each focusing on a specific topic of interest.

Visit **CountrysideNetwork.com/free-guides** to download yours today.

Subscribe online at countrysidenetwork.com/magazines or complete the form below.

SUBSCRIPTION ORDER FORM – SUBSCRIBE OR RENEW TODAY!

☐ Yes! Please sign me up for (six issues per year):

Countryside & Small Stock Journal

☐ 1 Year $19.99 ☐ 2 Years $32.00 ☐ 3 Years $45.00 *(Best Deal! Save 58% off the cover price!)*

Backyard Poultry

☐ 1 Year $24.99 ☐ 2 Years $39.00 ☐ 3 Years $54.00 *(Best Deal! Save 50% off the cover price!)*

Goat Journal

☐ 1 Year $24.99 ☐ 2 Years $39.00 ☐ 3 Years $54.00 *(Best Deal! Save 40% off the cover price!)*

sheep!

☐ 1 Year $24.99 ☐ 2 Years $39.00 ☐ 3 Years $54.00 *(Best Deal! Save 40% off the cover price!)*

Name: _____

Address: _____

City, State, Zip: _____

Email _____

☐ Payment Enclosed

Visa/MasterCard #: _____ Exp.: _____

Frozen Yogurt Treats

By Mary Jane Toth

FROZEN FRUIT YOGURT

1 cup fruit (fresh or frozen)

1/2 cup sugar

1 quart plain yogurt

Place the fruit into a blender or food processor. Add sugar and blend until smooth. Stir in plain yogurt. Freeze in an ice cream freezer. Freeze as you would ice cream. You can increase the recipe to fit your ice cream freezer.

ORANGE HONEY FROZEN YOGURT

(Mary Jane's favorite frozen yogurt)

2 cups plain yogurt

1/2 cup honey

1 can frozen orange juice concentrate (undiluted)

Mix all ingredients together thoroughly. Process in an ice cream freezer as you would for making ice cream.

TROPICAL FRUIT POPS

1 banana

1 cup crushed pineapple

1 pint fresh strawberries (hulled)

1/4 cup honey

1/2 teaspoon vanilla

1 cup plain yogurt

Combine banana, pineapple, strawberries, honey, vanilla, and yogurt into a blender. Blend until smooth. Fill small 5 oz. paper cups or plastic Popsicle® containers with mixture. Insert sticks and freeze until firm.

ORANGE BANANA STRAWBERRY YOGURT POPS

1 package frozen strawberries (10 oz. in light syrup)

1 banana

3/4 cup plain yogurt

1/2 teaspoon vanilla

Blend ingredients above until smooth. Spoon into 10 small paper cups. Do not fill to the top. You will be putting the following mixture on top of this one.

3/4 cup plain yogurt

1/4 cup frozen orange juice concentrate (undiluted)

Blend plain yogurt and orange juice concentrate together. Pour this mixture over the strawberry banana mixture. Freeze for about 30 minutes before sticking Popsicle® sticks into each cup. Freeze until solid.

YOGURT POPSICLES

Freeze your favorite flavored yogurt into Popsicle® containers and freeze for a quick and delicious treat.

The Art of Cheese & COUNTRYSIDE NETWORK

Present...

"CHEESEMAKING MADE EASY" DVD

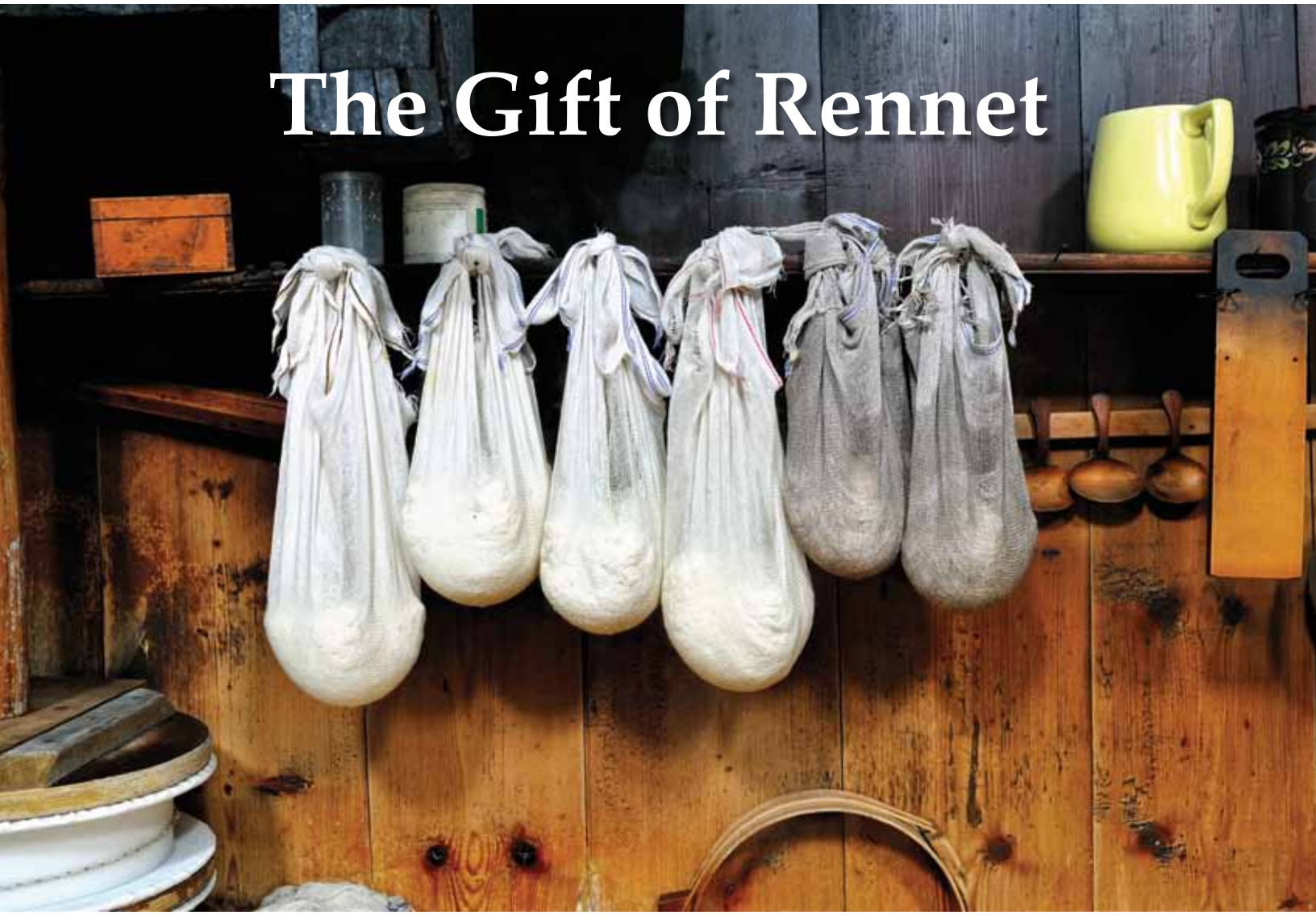
with Kate Johnson

Make Your Own Cheese At Home! 3 Course Cheesemaking DVD— ONLY $29.99

CountrysideNetwork.com/shop/cheesemaking-made-easy-download

Or call: 970-392-4419

The Gift of Rennet



By Vicki Dunaway

Back in 2002, I had the privilege of touring France with Ricki Carroll (of New England Cheesemaking Supply) and a group consisting mostly of amateur and professional cheesemakers from all over the U.S. The guides had arranged for us to take cheesemaking classes and to visit farmstead and cooperative cheesemaking operations all over the country. It was an amazing experience to learn from some of the world's most accomplished cheesemakers!

And it was on this tour that I began to develop a deeper understanding of the true importance and value of rennet.

For the first couple of days, we attended classes at a cheese school and visited several farmstead goat cheese operations in central France, all of which specialized in lactic curd type cheeses. Though I have to admit that the Pouligny made at the school was one of the most sublime cheeses I had ever eaten, by the third day the lactic cheeses — in all their fantastic forms — were running together in our minds and on our palates, and most of us on the tour were ready for some variety!

It is rennet that gives us that variety. Its gift is the possibility of making cheese that is sweeter than lactic cheese can ever be — and the opening of vast new worlds. Rennet also contributes strongly to the flavor and texture of cheese, an attribute often overlooked by cheesemakers.

Most cheese books speculate about the beginnings of cheese. Unrefrigerated milk would eventually curdle and separate on its own — that's a no-brainer, and "curds and whey" have been immortalized from way back. But the discovery of renneted cheese presents some interesting possibilities — did someone notice the curds found in a baby's up-chuck? Or did milk, carried in an animal stomach used as a vessel, agitated as the traveler walked, become cheese en route? (Good thing they didn't have our current patent laws in those days.)

What is Rennet and What Does it Do?

Lactic coagulation takes place, without assistance, at a very low pH which, by definition, is a strongly acidic state. Basically, if milk is left out long enough it will naturally acidify and curdle (also known as souring). Examples of lactic cheese include chèvre spread, crottins, and cottage cheese. A miniscule amount of rennet may be used in these cheeses to speed up coagulation or ensure a firmer curd, but it's not really necessary. Milk for lactic curd must set for a long time (usually eight hours or more) to achieve enough acidity to allow curdling. Rennet curdling works in an entirely different manner, taking place at higher temperature and a higher pH. Thus, rennet curd is referred to as "sweet" (less acid) curd.

Rennet is an extract made from the fourth stomach — the abomasum — of a young milk-fed animal. This extract contains chymosin, an enzyme that starts the process of the coagulation of milk by cleaving (splitting) a particular chemical bond on a casein molecule. Casein is an important protein found in milk, the one that gives us most types of cheese.

The strong links of calcium and phosphates in rennet curd give it a great deal more strength and elasticity than are present in lactic curd, which is why lactic curd is often referred to as "fragile." This is particularly true of goat milk curd, which tends to be quite delicate compared to cow or ewe milk curd. These minerals (calcium and phosphate) link to the casein micelles in rennet curd, whereas they drain away from lactic curds. Intermediate characteristics can be obtained by using only a small amount of rennet; this explains why adding a few drops of diluted rennet to the milk when making chèvre-type cheese results in a faster set, stronger curd, and better yield. For a mixed curd, low temperature (room temperature) favors lactic coagulation, while higher temperatures favor rennet coagulation.[1]

When to Add Rennet

When to add rennet and how much to add are functions of the particular cheese recipe. Some require significant acidification before adding rennet; in others we are instructed to add the rennet almost immediately after stirring in the starter culture. Note that the latter case should probably be adjusted if using direct vat set (DVS) cultures, the ones that have a powder added. These freeze-dried cultures require a bit of "wake-up" time to rehydrate and get started working, and it is usually recommended that the cheesemaker wait at least 30 minutes from the time of adding a DVS culture to the time of renneting, regardless of the recipe's instructions.

Nowadays we have pH meters and acidometers for measuring the lactic starter activity in our milk. Unfortunately, it often takes a lot of digging to find appropriate values for the various steps in the process of many cheeses. The English cheeses are well-documented — apparently the English are sticklers for using acidity to determine what to do when — but for many other types, particularly the less popular cheeses, we are left to hunting down obscure books or just plain old trial and error. The best book I've found for TA or pH markers for a wide variety of cheeses is *Cheesemaking Practice*, by R. Scott.

In *The Book of Cheese*, Thom and Fisk say, "After the rennet extract has been added, all control of the acid development is lost," warning that sufficient acidity must develop before adding the rennet. Too much acidification at the time of adding rennet will result in the acid being too high at each stage of the process, and the cheesemaking will be "hurried" and may result in an acid cheese. If the cheese has gone as far as beginning lactic coagulation, there is no point in adding rennet. Too little acidification, on the other hand, may give one a "sweet" cheese that has a short shelf life or may even be dangerous, allowing pathogens to grow in the cheese.[2]

[1] Larcher Ivan, *Cheese Processing* (Le Chaffaut, France, 2002), p. 15.

[2] Charles Thom and Walter W. Fisk, *The Book of Cheese* (New York, 1918), pp. 65-66.

Vicki Dunaway was formerly an artisan cheesemaker and editor of CreamLine *and* Home Dairy News.

Types of Coagulants for Cheesemaking

Knapweed

By Vicki Duanway

Despite sustained efforts to find replacements, most cheesemakers still regard animal rennet as the gold standard. War, competing uses for abomasa, and the rise of vegetarian/vegan/animal rights issues have all spurred research and development on alternate coagulants. Some efforts have been more successful than others. During his cheesemaking adventures, Kosikowski found a very unusual response to the vegetarian dilemma in India, where calf slaughter is prohibited: they (scientists, I presume) have tried boring a hole (fistula) in the side of live calves and extracting excreted rennet at feeding time.[i] Seems a bit desperate to me, but illustrates the high value of calf rennet.

Each plant-based coagulant is different and they are used in different ways. Cardoon, for example, is made using an aqueous extract of the flower—this particular enzyme is a requirement for the production of Serra da Estrela cheese of Portugal. On the other hand, the latex (sap) of the fig tree is used for coagulation. Fortunately, we are now able to search the internet for instructions on how to prepare and use these obscure coagulants. Below are instructions for making an extract of cardoon, from the legendary Artisan Cheesemaker website of James Aldridge. [ii]

Cynara Cardunculus

The plant "cardoon" naturally produces an enzyme (Cardosine A) which will coagulate milk. This is a true vegetable coagulant and is used by most artisan cheesemakers in Portugal. It is a member of the artichoke/thistle family. The flowers are plucked and dried then infused in warm water into a tea which is then used in the same way as one would use rennet: I usually use around 25 grams of dried flowers, twisted into a bag of cheesecloth, to a large cupful of warm water. I am not sure that it would be suitable for a cheddar-type cheese as it produces a more delicate set and, in my experience, seems to be rather more proteolitic [sic] than rennet. It has a quiet [sic] different life about it and it needs a perceptive person to work with it. (The amount you use will vary for many reasons ... try 5 ml. of the mixture per liter of milk as a jumping in spot.) It grows fine in the U.K. and is perennial.

Pepsin "Rennets"

With the cost of animal rennets up and availability down, porcine (from pigs) pepsin has been mixed in with animal rennet to make it go further. Pepsin alone can cause bitterness and is slow to coagulate fresh milk. Porcine pepsin loses some of its unwanted proteolytic activity at high temperatures and so may be more suitable for cheeses that require a high-temperature scald. One study cited by Scott found that cheese made with pepsin had a more open structure than that made with calf rennet.[iii] Pepsin can also be extracted from cattle, sheep, and chickens, though this is not practiced widely.

Microbial Rennets and Recombinant Chymosin

There is a lot of confusion about natural microbial rennets and those produced by genetic recombinant (GMO) techniques. Both are sometimes referred to as "microbial rennets," but they are entirely different. One also hears them called "vegetable" rennets, but neither has anything to do with vegetables. Both, especially the GMO ones, are often used for so-called vegetarian cheeses.

Particularly during and after World War II, there was a strong interest in finding rennet substitutes produced by bacteria and fungi. Species of *mucor*, *endothia*, *bacillus*, and even the mushroom *russula* all were investigated and found to produce enzymes that coagulate milk; some have been made into commercial products. Early versions often resulted in bitterness, hard curds that lost fat in the whey, curd shattering, high proteolysis, and/or other problems. Newer formulations exhibit greater purity with fewer problems; they are also sometimes blended with pepsin or calf rennet. *Mucor miehei* coagulants were successful, with a lower incidence of causing bitterness than some of the others. Marzyme is an example of a true microbial coagulant.

Recombinant chymosin is produced by microbes into which have been inserted the gene for production of prochymosin. The gene is transferred from calf abomasum tissue to one of several microorganisms, including *Escherichia coli* K-12, the yeast *Klyveromyces lactis* or the fungus *Aspergillus niger*. The microbes produce prochymosin, "followed by fermentation, cell destruction, activation of the pro-chymosin to chymosin and harvesting/producing large yields of 100 percent chymosin."[iv] According to Kosikowski, "This genetic product, transferred from an animal, is considered a plant product, as microbes are of the plant kingdom." (I'm not so sure this is true anymore — I think bacteria and fungi have their own kingdoms now.)

Recombinant chymosin is pure chymosin and has few of the problems of the natural microbial coagulants. It is available in single and double strengths, and one is even blended with pepsin to mimic natural rennet, which contains a small percentage of pepsin. Brand names with production organisms include: Chy-Max (E. coli K-12), Chymogen (*Aspergillus niger* var. *awamori*), ChymoStar (*Aspergillus niger* var. *awamori*), and *Maxiren Kluveromyces marxianus* var. *lactis*).

Soapbox

My strong favorite of rennet types is animal rennet, not because I like the thought of killing baby animals, but because it is the only type made (more or less) in the traditional way. The existence of all of the others is utterly dependent upon the laboratories of multinational corporations. If those labs closed tomorrow, there would be no more "vegetarian" rennet (other than the plant-based types). While I recognize that most of the commercially available animal rennet is also made in these labs, there is nothing preventing me from making my own.

Traditionally young ruminants — especially the useless males (sorry, guys) that would otherwise spend their time consuming scarce resources and butting heads — have been slaughtered for meat soon after birth. This is a worldwide practice born of necessity and is incorporated into many spring festivals, where the meat is a central feature of the celebration. Young goats, lambs, and calves provide high-quality protein at a time when other foods may be scarce in the natural cycle of things. Less "civilized" societies do not waste as we do — they use every part of the slain animal, and rennet is a highly valuable by-product. We should celebrate it.

Plant-based Coagulants

Coagulating substances obtained from plants were probably the earliest alternative "rennets" and are what you would call true vegetable rennets. There's a surprisingly long list of plant-based coagulants available, including:

- *Achillea millefolium*: Yarrow
- *Ananas sativa*: Pineapple
- *Articum minus*: Burdock
- *Carica papaya*: Pawpaw (papain)
- *Carlina spp.*: Alpine thistle
- *Centurea spp.*: Knapweed
- *Cirsium spp.*: Common thistle
- *Cynaria cardunculus*: Cardoon
- *Dipsacus sylvestris*: Teasel
- *Euphorbia lathyrus*: Spurge
- *Ficus carica*: Fig
- *Galum verum*: Lady's bedstraw, cleavers
- *Herculeum spondylum*: Hogweed
- *Malva sylvestris*: Common mallow
- *Ranunculus spp.*: Spearworts
- *Ricinus communis*: Castor bean (poisonous)
- *Senecio jacobea*: Ragwort
- *Solanum dalcamara*: Bittersweet
- *Solanum dobium*: Jubein
- *Urtica diocia*: Nettle
- *Withania coagulans*: Withania berry

[i] Frank V. Kosikowski and Vikram V. Mistry, *Cheese and Fermented Milk Foods* (Westport CT, 1997), p. 388.
[ii] Now located at http://www.isleofmullcheese.co.uk/jalldridge/jaindex.htm
[iii] R. Scott, *Cheesemaking Practice* (Gaithersburg MD, 1998), p. 161.
[iv] Kosikowski, p. 394.

Vicki Dunaway was formerly an artisan cheesemaker and editor of CreamLine *and* Home Dairy News.

How to Choose a Culture

By Mary Jane Toth

Probably the most often asked question from new cheese makers is how to choose a culture. This can be a daunting task, but made much simpler when you have a basic understanding of how and why the cultures work. I hope you find the following information useful in choosing which cultures you need for success in your home cheesemaking endeavors.

It's important to understand why you need a culture. The purpose of the culture is to raise the acidity of the milk, which helps the rennet to set the cheese as well as aiding in preserving and developing the flavor during the aging process.

Milk is a perfect medium for good and bad bacteria. The culture inoculates the milk with the good type of bacteria, which multiply by consuming the lactose (milk sugar) in the milk. The result raises the acidity, and once the good bacteria have taken hold in the milk they help prevent the bad bacteria form gaining a foothold. It's like a war between the good and bad. The good win the war when they can quickly outnumber the bad.

Basic Information

Cultures can be broken into two types: mesophilic and thermophilic. Choosing either a thermophilic or mesophilic will depend on the type of cheese that you are going to make.

Mesophilic is a non-heat loving culture and is used for making cheeses that are not heated to more than 102 degrees F. This is the most common and is used to make 90 percent of the variety of cheeses. This would include soft cheese, chévre, blue cheese, feta, cottage cheese, farmers cheese, Colby, Cheddar, Camembert, Brie, cultured buttermilk, and sour cream, etc.

Thermophilic is a heat loving culture and is used to make cheeses that can be heated to 130 degrees. This is used in most Italian cheeses such as Parmesan, provolone, mozzarella and Swiss, Monterey jack, etc. Yogurt is also made using a thermophilic culture.

Many varieties of these two types are available with names such as Flora Danica, Lactoccus Bulgarius, etc. No matter what types of fancy names are specific to that culture, it will still fall into one of the two types of culture. This simply means that they can have different strains of bacteria, which can produce slight differences in taste. I have used several with results pretty much the same and with no big noticeable difference in taste in the end product. No matter what it's called, mesophilic will always be a mesophilic and the same is true of the thermophilic.

Freeze Dried DVI or Reculturable: Which Type of Culture Should You Use?

Another question asked often is choosing between making a mother culture and using a DVI culture. All cheese cultures will come as a freeze-dried packet. Keep them frozen for long-term storage.

No matter what types of fancy names are specific to that culture, it will still fall into one of the two types of culture. This simply means that they can have different strains of bacteria, which can produce slight differences in taste.

DVI Culture

DVI stands for "direct vat inoculant;" this is added directly to the milk, usually at a rate of 1/8 teaspoon for each gallon of milk. The freeze-dried packet can be kept in the freezer for several months. I have been using one from my freezer that is about five years old. Just make sure to keep it double bagged in good freezer bags. The advantage to the DVI culture is that it can be kept in the freezer for long periods of time. It's very handy for the average home cheesemaker who is not making cheese on a daily basis. DVI cultures are definitely my preference. They are more convenient and produce more consistent results. Even large cheesemaking plants now use them.

Reculturable or Mother Culture

"Mother culture" must first be cultured in sterile milk before it can be used. This type of culture can be recultured by saving some from the previous batch to make the next batch. This can be kept going for a long time but the biggest drawback is that it will only keep in the refrigerator for about three days or it can be frozen in cubes for about a month. This means that you will need to be diligent about reculturing it so that the live bacteria are kept viable. It will not last forever. If not properly recultured on a regular basis it can produce inconsistent results.

Butterkäse

The Name Says it All

By Rikki Carroll

Butter (we all know what that is) and *kase*, the word for cheese in German, falls into the international language for cheese: *kase*, *kass*, *queso*, *queijo*, *caccio*, and even the English cheese all evolved from old Latin for cheese, *caseus*. Somehow just the name Butterkäse has us thinking about snack time, with this cheese just sliced or melted over something tasty.

The mild flavor and soft texture make this an ideal cheese for the table. I am sure that a lot of those requests that came to me for this recipe came from folks who grew up with this as the "go to" cheese at home when young (or not so young).

The cheese is normally presented as a rectangular loaf-like shape and normally weighs about 3.5 lbs. It does contain a high moisture content and at room temperature may begin to deform slightly. The higher moisture is also part of the reason why it has such a buttery texture and melts so well. This higher moisture is, in large part, due to the way the cheese curd develops. The cheese can also be seen in low disc-shaped forms as well and is probably the easiest way to make this at home.

The surface of the cheese undergoes a series of light salt washes during its early aging life, but this is kept to a minimum and eventually washed off to favor a milder flavor. This also serves to maintain the high moisture and thin supple rind.

The body of the cheese is usually quite open with irregular holes (as in the photo to the left). These are called mechanical holes and are the result of an early draining of the curds and very little to no press weight during the molding.

I have also seen Butterkäse showing the round shiny holes from internal expanding gas pockets, similar to those found in Gouda or Alpine-style cheeses (Comtè, Gruyère, etc.). These would be the result of a different press weight and warmer aging conditions.

A Very Different Cheese Process

There are three process variations that make this cheese what it is:

1.) One of the most interesting and unusual stages in the process for this cheese is the temperature to which the milk is heated before adding rennet. The milk is taken to 104-108 degrees F before the rennet is added. These higher temperatures (up to 108 degrees F) result in faster rennet coagulation times and above 106 degrees F the rennet coagulation begins to slow again. Lower temperatures result in slower coagulation as well.

Therefore we do expect the coagulation to be quicker and firmer. As a result this will tend to keep more moisture in the curd, which is less likely to drain.

2.) Another process point of interest is the use of the two different cultures:

A. A mesophilic culture that does best at 86 degrees F and is well on its way to dying off at 104-106 degrees F.

B. A thermophilic culture that does well at 104-112 degrees F (optimum temperature range).

Considering the mesophilic cultures, the milk is initially heated to 86 degrees F but remains there just long enough for the mesophilic culture to begin developing (about 30-45 minutes) before the temperature is raised to 104-106 degrees F and the mesophilic culture dies off.

The obvious question is … Why bother adding the mesophilic just to kill it off, since it is not allowed to live long enough to carry out its primary role of converting milk sugars to lactic acid? The answer to this points us to the secondary function of most dairy bacteria. Their secondary role is the release of enzymes following the death of the cell. These have been found to function heavily in the breakdown of proteins during the aging process. These protein changes will be realized in the final texture of this cheese.

The thermophilic culture, on the other hand, will be comfortably working at its optimum temperature. This is a much higher initial starting temperature than most other thermophilic cheeses use.

3.) Also of note is that Butterkäse is normally a very mild cheese due to a restrained development of acid and can be found with a slightly acid taste as well as a sweeter version. This is usually controlled by varying the availability of lactose during the process. The sweeter version has a good portion of the lactose taken out and replaced with warm water before the curd is drained. This is known as a "washed curd" process and is similar to that used in the making of Gouda cheese. I will fully detail these two options.

The mild flavor and soft texture make this an ideal cheese for the table. The higher moisture is part of the reason why it has such a buttery texture and melts so well.

A Modern Cheese

In looking for some background on the history for this cheese, I was surprised at how little information there was available. This leads me to believe that it is a very modern cheese, developed perhaps in the last 50 years. (Yes, that would be modern for cheese history!)

For such a young style of cheese, I do find it rather surprising how quickly its popularity has increased, but it really is an all-around tasty cheese that has certainly gained its fans quickly. Currently this cheese is made in Germany, Austria, Switzerland, and even in the U.S. several producers can be found.

This growing popularity is another great reason to focus on this cheese recipe.

A Recipe for Making Your Own Butterkäse in the Kitchen

Our intent for this cheese is to produce a relatively moist curd going into the forms and allow it to continue developing acid while draining whey in a warm environment.

Before you begin you will need:

2 gallons of milk
(not ultra-pasteurized)

Cultures:

1 packet of our buttermilk culture as the mesophilic addition for it's enzyme contribution.

1 packet of our C201 thermophilic culture for the higher temperature.

Geotrichum just a pinch (1/64 teaspoon) to dry out the surface and develop a protective surface growth. Add this with the other cultures.

Liquid rennet (2.25 ml or slightly less that 1/2 teaspoon).

Brine for initial salting the cheese. (This should be prepared in advance.)

Salt (non-iodized) will be needed to prepare the washes for aging.

A good thermometer.

A knife to cut the curds, and a spoon or ladle to stir the curds with.

Stainless 6-inch mold. (1)

Some butter muslin to line the molds for draining the curds.

Draining mats to allow the whey to run off from the molded curds.

A small weight (5-8 lbs.) to apply weight for slight consolidation of the curds.

Calcium chloride for pasteurized cold-stored milk.

Everything needs to be clean and sanitized.

Acidifying and Heating the Milk

Begin by heating the milk to 86 degrees F (30 degrees C). You do this by placing the milk in a pot or sink of very warm water. If you do this in a pot on the stove, make sure you heat the milk slowly and stir it well as it heats.

Once the milk is at 86 degrees F, the two cultures can be added plus the geotrichum. To prevent the powder from caking and sinking in clumps, sprinkle the powder over the surface of the milk and then allow about 2 minutes for the powder to re-hydrate before stirring it in.

Allow this to ripen for 45-60 minutes, holding the temperature above. During this time, both the mesophilic and thermophilic bacteria will begin to awaken but will be doing only minimal acid production.

Prepare the mold, cloth, and draining area by sanitizing everything while waiting for the culture to develop.

Next, begin heating the milk to 104 degrees F. As you heat from 86 degrees F, any mesophilic activity that has begun will slow down until it reaches 102-104 degrees F, then they will begin to die off within about 15 minutes at the higher temperature. The enzymes left behind will be beneficial during aging. Meanwhile, the thermophilic will begin to move into a more favorable temperature range and begin converting lactose to lactic acid.

Coagulation with Rennet

Then add about 2.25 ml or slightly less than 1/2 teaspoon of single strength liquid rennet.

The rennet needs to be added and mixed in thoroughly for 1 minute without agitating the milk excessively (up and down mixing is best). The milk needs to become still within three minutes of adding the rennet.

Adding warm water back.

The milk now needs to sit quiet for 20-25 minutes while the culture works and the rennet coagulates the curd. This is a very quick coagulation time due to the higher temperature and the milk will begin to thicken at about eight minutes.

The high temperature will form a very firm curd and should have an almost tofu-like texture. Test the curd to be sure a good firm coagulation has taken place. The break should be very clean and the whey forming in the gap should be neither too milky nor too clear.

Cutting Curds and Releasing the Whey

The firm curd can now be cut. The first cut should be vertical only in both directions at about two inches. Rest the curd for about five minutes before the next cut. This will allow the cuts to heal and release minimal fat into the whey. Next, make the horizontal cut with a spoon or draining ladle and continue breaking the curd to about 5/8-inch pieces over the next 7-10 minutes. Keep the curd moving gently during this time to avoid clumping.

Cooking the Curds

Considering that the milk/curds were already heated to a higher temperature of 104-106 degrees F, there is no need for further heating of the curds.

We do have a couple of options to vary the character of the final cheese at this point:

Option 1

To produce a slightly more acid profile cheese: Let the curds rest for a short time (15-30 min.) to heal, release whey, and firm up. Only intermittent stirring (every three to five minutes) should be done just to keep curds free from matting.

Option 2

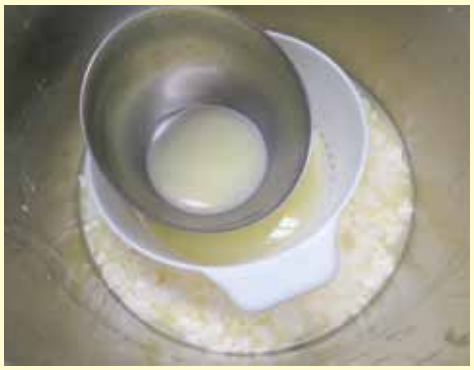
To produces a sweeter cheese:

This option involves a whey removal and replacement with the same temperature water. This will remove lactose and slow the acid development by reducing the lactose supply for the culture. Do this by:

- Stirring the curds gently for 10 minutes.
- Allow the curds to settle to the bottom.
- Remove 50 percent of the whey.
- Add the same amount of water back at 104-106 degrees F.
- Stir gently for 30 to 45 min.

The final curds should be cooked well enough, so that when a small handful is compressed slightly, they do not become "mooshy" (my new technical word for disintegrating, breaking down, etc.). In other words, they may tend to deform but do not individually break up in your hand. This can be adjusted by the amount of final stirring times in both options above.

Keep the developing cheese warm using pans of hot water. The draining table is then topped with a closed cell foam insulating pad and a top board to keep the heat in.



Removing the whey

Adding warm water back

Keeping the developing cheese warm using pans of hot water. The draining table is then topped with a closed cell foam insulating pad and a top board to keep the heat in.

Forming the Cheese

The final curds can now be transferred to the form. (You should have already prepared and lined with butter muslin.)

Begin by removing whey again down to about 1-inch above the curd surface. Then transfer the curd along with the whey to your form, lightly compacting it as you fill. Initially, you may use a 4-6 lb. weight for about one hour to consolidate the curd but do remember that an open internal paste is expected for this cheese. At this point, your cheese is still converting lactose to lactic acid and must be kept warm at 80-90 degrees F for the next five to six hours while this acid production completes. The interior of the cheese may remain much warmer for several hours, since it is cooling down from the original curd temperature of 104 degrees F.

I maintain the higher temperature during draining here by using my insulated draining table with pans of hot water and an insulated cover as shown below.

You can do this at home simply by using an insulated cooler with jars or jugs of warm water to incubate the cheese. Remember to remove the whey that is released, as it accumulates.

The fresh Butterkäse will need to be turned frequently at 30-minute intervals to close the surface openings during the first three to four hours. The cheese should be removed from the mold, unwrapped, turned, rewrapped, and put back into the mold at the above intervals to assure an even surface consolidation. At each turn you will notice the cheese has formed a smoother surface and rests lower in the mold.

At about five to six hours after molding the cheese, it should be ready to be unmolded, cooled overnight, and transferred to its salt bath. If the cheese still seems to be expelling whey, this is an indication that the cheese has cooled too much during the post-molding and acid development has slowed. Allow it to sit a bit longer to develop its final acid and try to warm the developing cheese more next time.

Salting

You should already have a saturated brine prepared for salting this cheese. A simple brine formula is:

1 gallon of water to which is added:

2.25 lbs. of salt

1 tablespoon calcium chloride (30 percent solution)

1 teaspoon white vinegar

The cheese now needs to be soaked in the brine for about three to four hours. The brining is done at a cool temperature of 52-56 degrees F. Warmer conditions cause a faster salt intake and allow certain salt-loving molds to grow. (I always keep my brine in the cool cave between uses.)

The cheese is taken from the cave to its wash basin. Note the light mold growth here. The light mold growth is carefully washed off.

The cheese will float above the brine surface, so sprinkle another teaspoon or two of salt on the top surface of the cheese. Flip the cheese and re-salt the surface about halfway through the brine period.

At the end of the brine bath, wipe the surface and allow the cheese to surface dry for a day. The surface may darken somewhat during this time but watch that no cracking occurs. I normally dry my cheese at about 52-56 degrees F and a moisture of about 65-75 percent.

Butterkäse — reprinted with permission by Ricki Carroll, New England Cheese Making Supply Company, www.cheesemaking.com, email: info@cheesemaking.com.

The cheese is taken from the cave to its wash basin. Note the light mold growth here. The light mold growth is carefully washed off.

The cheese gets dried off for a few hours after the wash and then is placed in its ripening tray to preserve the higher moisture in the cave.

Aging

The cheese is now ready for aging.

The cheese should now be placed into your aging space at 52-56 degrees F and 90-95 percent moisture. This is a higher amount of moisture than my cave normally operates at, so I use flat trays with covers as seen below to hold the higher moisture. The ripening should be done for a minimum of four to six weeks but it can develop more character if held for longer.

The cheese gets dried off for a few hours after the wash and then is placed in its ripening tray to preserve the higher moisture in the cave.

The cheese should be turned at least once a day and during the first week it will develop a yeast community on the surface. The cheese will change from a rather dry surface to a greasy surface due to this. The surface community is actually decreasing the acidity because of the yeast and thus preparing it for a thin coat of geotrichum to grow. A small amount of a rosy-orange bacteria (natural *B. linens*) may also develop.

This yeast (and eventually molds) should be controlled by periodically washing in a light brine (1 tablespoon non-iodized salt in 1 cup of water) every three to four days. If the cheese surface tends to dry between these washings, wipe them as needed with a cloth moistened with unsalted potable water. In this case the moisture needs to be higher.

Then dry for one to two hours but never let the surface darken or become completely dry. Then return to the aging space. After about 10 days, you will see a thin powdery white growth (the geotrichum you added initially).

At about three to four weeks, the cheese can be washed for the last time. The earlier this is done, the milder the final cheese. At about four to six weeks the cheese is ready for the table, but if a more complex cheese is desired with a softer structure, it can be wrapped and moved to a cooler 40-42 degrees F aging space for extended aging. The moisture needs to be kept high enough to keep the surface from drying out.

Goat Cheese With Ash

The Goat, the Vine, and the Fire

Courtesy of Jim Wallace, New England Cheesemaking Supply Company, www.cheesemaking.com

The history of ash in cheesemaking goes back hundreds of years to its use as a method to protect the surface of young cheese. As years passed, they later discovered that it also greatly improved the surface molds and how they grew on fresh cheeses for ripening. In earlier times, this was ash from the burning of the grapevine clippings in the Loire Valley of France, which was even then noted for their wealth of fresh goat cheese. Today, however, the surface is normally covered with an activated charcoal mixed with salt. Many folks may look at this ash/charcoal addition and say: "I am not interested in eating dirt with my cheese." Well, the reality is that this is not barbeque charcoal and it is not a gritty ash. It is a finely powdered, food-grade component actually revered by the medical world for its ability to control and absorb toxins. Currently, smoke, ash, and fire components are the rage in culinary circles and should also lead to some great additions in cheese making. As long as the ash/charcoal is not overdone, it will really enhance the cheese and many folks will not even notice the difference in taste. They will, however, have no clue as to how it has improved the development of the cheese. They may simply pop in with, "Wow! This is much better than before. What did you do different?" I can also imagine incorporating a little bit of smoke to the ash for a subtle kicker. Your imagination should be your only limitation with this new tool of ash and charcoal in your cheesemaking chest.

A Bit of History

Since the beginning of cheesemaking, the preservation of the fresh cheese surface has always been the next major concern after the cheese has left the brine bath or dry salt table. This wonderfully rich and aromatic surface has always been just as attractive to the ever-present microbes and mold spores as it has been to us and hence, the race begins. How do we keep the cheese surface in good condition until the cheese has aged enough for the table, whether this was a few days or a few months? Before the invention of the wax or plastic coat and definitely before the present permeable plastic wraps of today, there were far fewer options. Initially, it was common to just let it go *au naturale* and accept whatever ambient growth took place, but at times this became a bit too coarse for even the most basic cheese.

Then, at some point long ago, someone had the bright idea of coating the surface with the fine grey ash that was readily available from burnings. This seemed to preserve the cheese by discouraging the flying hoards and the "floaties" from settling and setting up housekeeping on the surface of their cheeses. It also soon became apparent that the ash tended to dry off the surface as well, making it less habitable for the uninvited.

Why Goat Milk Cheese?

If you have seen ash-covered cheese already, it may have been a goat milk cheese because most of them are. Why goat milk? The primary reason for this is that these cheeses are most often lactic in nature and therefore they have very soft surfaces and very weak bodies. Certain surface treatments such as rubbing, brushing, and oiling as used on firmer natural rind cheeses will not do well with these fragile surfaces. Therefore, a common treatment for these rinds was to develop a natural mold cover. This could be either a natural mixed mold rind or, for more aesthetic presentation, the bloomy white rinds. Since this style of lactic cheese develops a high level of acid and the white mold is SLOW to grow with this, the ash or charcoal was added to reduce the acid as will be explained below, thus allowing the mold to grow quicker and more evenly to begin the ripening process. Usually this is done by adding salt to the charcoal or ash and applying this after the cheese is well drained.

In addition, the use of the ash with goat milk provides a very aesthetic and unique presentation with the snow-white milk contrasting with the black lines around the surface or through the center.

> Many folks may look at this ash/charcoal addition and say: "I am not interested in eating dirt with my cheese." Well, the reality is that this is not barbeque charcoal and it is not a gritty ash. It is a finely powdered, food-grade component actually revered by the medical world for its ability to control and absorb toxins.

What Does Ash or Charcoal Do?

ASH: When wood or any other vegetable matter (mostly cellulose) is burned in open air, all that remains is a fine grey particulate which is largely comprised of an alkaline (high pH) salt. This is a true ash.

CHARCOAL: When it is burned with a limited air supply we have charcoal which is mostly carbon along with some of the alkaline salts. In addition, the charcoal structure is a solid with many small pores in its structure. These small pores are capable of absorption or collecting unwanted components such as contaminates from air and water.

ACTIVATED CHARCOAL: If the charcoal undergoes special treatment (heat, chemical, etc.), it can become activated charcoal or super charcoal. This will contain much finer micropores and therefore its ability to absorb will be much greater. When any of these are used on the surface of a cheese with a high acid surface such as a fresh lactic cheese: The surface acidity will be neutralized by the alkaline salt, and the excess moisture and acidity will be lessened by the absorption of the charcoal. In both cases, the cheese surface becomes less acid and this creates a more attractive surface for molds such as *P. candidum* (the white mold of Camembert) to develop more quickly. This also dries the surface a bit and keeps the rate of mold activity from becoming excessive. The most effective of these products is the activated charcoal because it does more of the absorption than either charcoal or a simple ash.

How to Make a Goat Milk Cheese Ripened With Ash to Develop a Grey to White Bloomy Rind

The cheese we will be making will be a lactic-type goat milk cheese with a covering of salt and fine powdered charcoal. As it ripens, it will change from dark grey/black to a beautiful blue-grey to white surface. Before you begin, you will need:

1 gallon of goat milk (preferably fresh).

1 packet of our chévre culture (the small dose of rennet powder is already contained in the pack).

1/16 teaspoon of our *P. candidum* mold.

2–3 teaspoons salt (non-iodized cheese salt).

1/4–1/2 teaspoon charcoal to mix with salt and to dust the surface of the cheese to reduce acid.

A good thermometer.

A knife to cut the curds, and a spoon or ladle to stir the curds with.

Molds — Saint Marcellin (2-3 molds depending on milk).

A colander and butter muslin to drain the curds (optional).

Draining mats to allow the whey to run off from the molded curds.

Everything needs to be clean and sanitized.

Calcium chloride if using pasteurized cold stored milk.

At day three, I am already seeing the first signs of the white mold as the surface changes from black to a dusky grey as seen in this photo.

By day 8-12 the cheese is ready to cut as fresh, but can be held for several weeks as the surface enzymes continue to work on the proteins, leading to more complexity in flavor.

Begin by heating the milk to 68-72 degrees F (20-22 degrees C). If you do this in a pot on the stove make sure you heat the milk slowly and stir it well as it heats. Once the milk is at the proper temperature, the chévre and *P. candidum* culture can be added. To prevent the powder from caking and sinking in clumps, sprinkle the powder over the surface of the milk and then allow about 2 minutes for the powder to re-hydrate before stirring it in.

COAGULATION WITH RENNET:

Enough rennet is included with the culture to ensure a proper set. The milk now needs to set quietly for 18-24 hours while the culture works and the rennet coagulates the curd. The thermal mass of this milk should keep it warm during this period since we are doing this at room temperature. It is ok if the temperature drops a few degrees during this time, but if your room is cold, it is essential to find a warmer space or to provide some additional insulation. The longer the curd sets, the more acid will be produced.

DRAINING CURDS AND RELEASING THE WHEY:

When a good curd has formed, you will see a thin layer of whey over the curd mass and the curd may show cracks and separation from the sides. It will also show a clean break when tested with a knife or finger. This curd can now be transferred to the molds with a small spoon or ladle to allow the whey to drain. The amount of time needed for draining will be about 8-20 hours at 68-72 degrees F, but this is dependent on what you want for moisture in your final cheese: less time for a sweeter and moister cheese, more time for a drier and tangier cheese. Remember that the bacteria is still working and as long as the whey is present it is able to convert the lactose (in the whey) to lactic acid. Option: You can also pre-drain these curds by ladling into a cloth-lined colander and allowing them to drain for four to six hours before transferring to the molds. This will eliminate the wait during direct curd transfer above while the curds drain in molds. The time of draining and the temperature

of the room determine how much whey drains from the curd. The draining period regulates the body characteristics and determines the final quality of the cheese. This period can be as much as 12-36 hours at a temperature of 68-72 degrees F. Higher temperatures promote gas formation and excessive moisture loss; lower temperatures inhibit whey drainage and produce a very moist cheese with very short shelf life. I have tried all kinds of variations in forms including the pyramid molds. I have also added an additional layer of ash about midway (just because it really looks neat). I simply dusted a thin layer of the charcoal with no salt (this can be messy) after filling the molds about 2/3rds full, then added the rest of the curds. The 2/3rds full line ends up at about the half-way point because of the settling and refilling seen below.

When the molded cheese stops dripping whey it should be firm enough to carefully un-mold. The cheeses are now ready to be salted. The charcoal and salt are simply mixed together. I use anywhere from a 1:5 to 1:8 charcoal to salt ratio, depending on how heavy an ash surface I want on the cheese. The base salt amount should be about 1 teaspoon per cheese and this is applied by sprinkling about 1/2 teaspoon per surface. This can be evened out with the hand and spread slightly down the sides (mess alert again). I usually wait until the salt dissolves and soaks into the cheese body, leaving the black surface behind before turning and salting the other side. Next, when the salt has been absorbed and no whey drips from the cheese, they can be taken to a space for drying. What we are looking for here is the surface moisture to dry down so that no bright moisture spots can be felt or seen and the surface takes on a matte appearance. This is ideally done in a room at 60 degrees F with 65-70 percent moisture. A plastic or reed mat should be placed under the cheese to allow air movement. Once the cheese is dry it can go to the aging space at 52-56 degrees F and 90-95 percent moisture. Here it will undergo the final ripening, but must be turned daily to even the moisture and keep the mold from growing into the mats. If you have made this lactic bloomy style before but without the ash/charcoal layer, you will note some differences:

- The cheese surface seems to dry down a bit quicker than without.

- The mold develops much quicker than without. I find it shows up in about half the time.

- The cheese takes on a much more aromatic note. I associate it with the quicker development of the natural yeast population (ambient) and the more friendly *P. candidum* environment. It's a wonderful apple/pear with maybe a bit of sweet wine smell.

Say Cheese!

Home cheesemakers show off their dairy delights!

Alpenthal's dairy goats in Wyoming are providing us with plenty of milk to make flavorful chèvre. We even sell it at the Farmers Market.
— Tanja Miller

Si hay queso fresco ranchero el día de hoy.
— @godofredoalba

Squueeeeek-kkkkyyy goat cheese. — @bigrackacres

In our tipi with my own homemade Cabra al Vino. I made this wine soaked goat cheese last year, and now it's ready to eat! — @marble mounthomestead

— @endlesswinterfarm