Gathering Summary: CheeseMaking at Home;

A Panel Presentation, June 15, 2011

Summary and photos by Catherine Haug
(*photo of Shelli's waxed cheese round, right*)

Introduction

Panel members: Fran Wade and Shelli Riedesel.

Handouts

From our previous gathering on making cheese:

- Gathering Summary: Making Cheese and Tofu, by Fran Wade
- Cheese Making (pdf handout, by Fran)

And new photo-essays on Cheese making with Kalispell Kreamery Milk:

- Cheese Making with Kalispell Kreamery Pasteurized Milk (pdf)
- Cheese Making: Waxing the Round (pdf)

Related pdf files on The EssentiaList

- How to Make a Cheese Press (pdf)
- Cheese & Tofu Making (pdf)
- Yogurt & Kefir, from Powdered Culture (pdf)
- Culturing Milk: Making Yogurt at Home (pdf)
- Using Kefir Grains (pdf)

Cheesemaking with raw milk, by Fran Wade

Fran recommends the book *Stocking Up*, by Carol Hupping & staff at the Rodale Food Center, from which she learned this process [For a peak inside, see Amazon] (4).

Equipment & Ingredients needed

See Gathering Summary: Making Cheese and Tofu, by Fran Wade for more info (1)

- stainless steel pot for heating milk
- large spoon
- long knife
- cheesecloth *
- cheese press (Fran's husband made hers)
- cultured buttermilk **; 1 quart buttermilk for every 2 gallons of milk
- rennet (Fran uses vegetarian rennet tablets, but liquid can also be used)
- milk: 3 ¾ gal. milk makes 3 - 5 lb cheese; 5 qt. milk makes 1 lb cream cheese.

* For cheesecloth you can use: good quality cheesecloth, butter muslin, game bags (cut up), or scrim (by the yard a JoAnn's). Wash before using.

** add 1 Tbsp buttermilk to each of 4 quart jars, fill with milk and allow to thicken, to make 4 quarts buttermilk; save some for next batch of cheese.

Method for Semi-Soft Cheese

See Fran's handout: The EssentiaList: Cheese & Tofu Making (2) for more info.

Prepare buttermilk (activator): Inoculate milk with buttermilk the night before: add 1 Tbsp buttermilk to each of 4 quart jars, fill with milk and allow to thicken.

Inoculate milk for cheese: Add buttermilk to milk in large pot; warm over low heat to 85° - 90° F. Remove from heat & allow to ripen 2 hours.

To curd: Dissolve ¼ tablet of rennet in ½ cup cool water for every 2 gallons of milk. Note that it may not all dissolve, and that it weakens as it rests so use within 30 minutes. If using liquid rennet, follow directions on the box.

Stir into warm inoculated milk; let it rest until it curds and forms a clean break.

<< Approaching Clean Break

Clean Break >>

Cut the curd: When a clean break is achieved, cut the curds with a long knife, roughly 1" between each cut. Holding knife vertically, cut first N to S, then E to W; then holding knife at an angle cut again. The curds move around in the whey; just do the best you can.

Set the curd: Put over low heat, and heat curds and whey to 105° F, stirring constantly. This takes about 45 - 60 minutes (stirring with clean hands works best and allows you to feel the texture of the curds). Cut up large pieces of curd as needed. When curds are the consistency of scrambled eggs, they are ready.

Let curds settle: Remove from heat and let stand 1 hour for the curds to settle to the bottom with whey on top. (If curds float, you have a problem; see Shelli's presentation).

Drain & salt the curds: Ladle off the whey (give it to animals, make ricotta, or use for fermenting vegetables). Add salt &/or desired flavorings such as garlic & herbs to curds. Line a bowl with cheesecloth; pour curds in, let settle, then gather corners together, tie, and hang over a pail to drain.

Press & ripen cheese: Transfer soft cheese to cheese press so it can drain off remaining whey, adding weights. Let this sit overnight.

Bandage daily 5 - 6 days to form a rind, wiping off with cider vinegar each day. Fran's never lasted that long (they ate it up - excellent on pizza).

Cream cheese:

See Fran's handout: The EssentiaList: Cheese & Tofu Making (2) for more info.

- Mix ¼ cup buttermilk* into ½ gallon fresh raw milk [Fran never tried pasteurized].
- Add rennet as for semi-soft cheese and stir until it thickens.
- Warm and keep warm for 12 hours. The whey will separate.
- Cut curd and drain in colander lined with cheesecloth. Then hang 12 - 15 hours to drain.
- When desired flavor and consistency is reached, you can salt it to keep 4 - 5 days (or 3 - 4 days if not salt). Refrigerate when done.

[*Cat's note: you can also use yogurt. Pour yogurt into cheesecloth-lined colander and let drain until desired consistency is reached. See The EssentiaList: Culturing Milk: Yogurt for a photo demonstration of making yogurt at home; also available as printable pdf.]

Ricotta cheese:

See Fran's handout: The EssentiaList: Cheese & Tofu Making (2) for instructions.

This is a great way to use up all that whey!

Comment from audience:

> I get 4 - 6 oz of ricotta from a gallon of goats' milk by adding 2 Tbsp cider vinegar to hot whey. After the solids sink to the bottom, I line a colander and transfer the solids with a ladle (whey is delicate), and drain 3 - 4 hours. If not using it right away, I freeze it in plastic containers.

Cheesemaking with pasteurized milk, by Shelli Riedesel

Shelli dry-demonstrated the method used for making cheese with HTST pasteurized milk from Kalispell Kreamery. See also photo demonstration by Shelli and Catherine, in two parts:

- Cheesemaking with Kalispell Kreamery Milk (3)
- Waxing the Round (4)

Pasteurized milk can be used to make cheese, provided it is vat or HTST process, but may require the addition of 2% calcium chloride solution to help it curd. Ultra-pasteurized milk generally does not work well for cheesemaking. See The EssentiaList: Food Safety & Pasteurization (pdf) for more on the different types of pasteurization.

We used the following guides by Dr. David B. Fanhauser, Ph.D., Professor of Biology and Chemistry, University of Cincinnati Clermont College, to make a semi-hard cheese:

- Beginning Cheesemaking: Ingredients & Equipment
- Basic Cheesemaking for 1 Gallon of Milk

Making the Cheese

Step 1: Inoculate the milk. After several false starts using kefir or buttermilk as the inoculant, we switched to using Cat's homemade yogurt (see Culturing Milk: Yogurt). [Cat explained that we allowed the inoculated mixture to rest overnight before making the cheese, but this allowed the mixture to thicken, and then the rennet can't work. Also we waited too long for the rennet to fully dissolve, not realizing that the longer you wait, the weaker it gets.]

We warmed 1 gallon of milk to 68° F in a large, sterile pot. This goes fast so watch closely. Then added ⅓ cup yogurt (or could use 2 Tbsp buttermilk) to some of the warm milk in a cup and stirred to combine. hen added this back into the pot of warm milk.

Cover with lid and wait 1 hour before adding calcium chloride and rennet.

Step 1 ½: Add CaCl2: Mix 1 tsp of 30% CaCl2 solution into ½ cup warm pure water (for 1 gallon of milk), then add to the inoculated milk. We tried a half-batch with, and a half-batch without the CaCl2 to see which gave the better result. Our CaCl2 was obtained from Evergreen Pharmacy (no prescription required), or you can order it from New England Cheesemaking Supply co (13) or Leeners (14).

Step 2: Warm inoculated milk to 86° F with stirring. Meanwhile we crushed ¼ tablet of rennet between 2 spoons and mixed into to ¼ cup warm water. NOTE: keep rennet in freezer when not using. Use the rennet solution within 30 minutes for maximum effectiveness. Then stir into warmed inoculated milk.

Cover and let site about 1 hour, undisturbed, for a clean break to occur (see photos above). The curd pulls away from sides of the pan. Let sit overnight.

Step 3: Cut the curd (see Fran's description, above).

Step 4: Set the curd: Warm over low heat and stir with clean hands until reaches 92° F (34° C) for soft cheese or 102° F (30° C) for hard cheese. Hold at desired temperature for 15 minutes. This is not easy as it tends to warm quickly. It it gets too warm, set the pot in an ice bath until it cools back to desired temp.

This is where we noticed a difference between the batch with CaCl2 and that without. Hard flakes (rather than nice curds) formed in the batch without the added calcium. We gave that batch to the pigs and continued only with the batch that included CaCl2.

Step 5: Separate curds and whey: Remove the pot from the stove. The curds should sink. If they float it is not good - it has been infected with undesirable bacteria. However, if you age the cheese, it may kill the bacteria.

Line colander with cheesecloth. Add curds and let drain. Then tie up and hang overnight, Squeezing the ball to get all the whey out. Then dump out of the cheesecloth into a bowl.

Step 6: Salt the cheese: Mix in by hand, 2 tsp cheese salt per gallon of milk used. Salt keeps bacteria out and helps the curing process.

Step 7: Press the cheese. Shelli made a cheese press out of an old tupperware container into which her 2 ½ lb weights just fit. Line the press with clean, boiled cheesecloth. Add cheese, fold cheesecloth over the top, and add the weights for 5 lb total.

Place in refrigerator overnight. If cloth is wet, you need to change to a fresh cloth. Check every day, and salt the surface lightly each day, then replace (or use fresh) bandage for a week to 10 days, until a nice rind has formed.

Wax the cheese

Waxing will help keep the cheese from molding in storage, but there must be a good seal between the cheese and the wax; air pockets invite mold.

Use cheese wax or natural beeswax. We used the latter. [Paraffin is too hard and tends to crack. Paraffin and cheese wax are made from petroleum, which is not sustainable.] Colorants can be added before melting. There are several methods used for melting and applying the wax; we opted to use a pie pan in the oven.

Step 1: Cut a chunk of wax and place in a pie pan. Melt in 350° F oven to 200° F - when it begins to bubble. Remove pan from oven - be careful of the hot wax; it can cause serious burns and could catch on fire if it spills in the oven or onto a hot burner.

Step 2: Set cheese in pan to coat one side, then remove to waxed paper, with freshly-waxed side up. If there are any cracks or breaks in the wax, fill them by drizzling hot wax from a spoon over the area (or you can brush on the hot wax).

Wait about 5 minutes for it to harden, then turn it over to repeat process on the other side. Wait another 5 minutes and then roll the round to coat the edges.

Repeat this process two more times for 3 total coats of the wax.

Then put the cheese into cold storage (refrigerator or cool root cellar). Used wax can be melted and strained for reuse.

Q: How do you make feta?

A: Shelli has made feta, but there wasn't time to discuss this. She and Cat will work on a photo-essay on the process, using raw goats milk, this fall.

Sampling the cheeses

Fran brought samples of garlic & herb-flavored semi-soft cheese and of cream cheese served on crackers, for tasting.

Shelli brought our waxed round so everyone could see what it looked like. Then Stephanie removed the wax from half the round and cut it into bite-size pieces for tasting.

Stephanie also served a delicious dessert and we all circulated for discussion.

Mmmmm.

Resources & References

ESP Articles & Handouts

1. Gathering Summary: Making Cheese and Tofu, by Fran Wade (pdf; essentialstuff.org/wp-content/uploads/2009/03/cheese-tofu_fw-se_032509cprs.pdf)
2. Cheese Making (pdf handout, by Fran; essentialstuff.org/wp-content/uploads/2009/02/cheesemaking_fwade1b_esl.pdf)
3. Cheese Making with Kalispell Kreamery Pasteurized Milk (4 page pdf; essentialstuff.org/wp-content/uploads/2011/05/Cheesemaking_KKreamery_EsL.pdf); or

   Cheese Making with Kalispell Kreamery Pasteurized Milk (post; essentialstuff.org/index.php/2011/05/26/Cat/cheese-making-kalispell-kreamery-milk/)
4. Cheese Making: Waxing the Round (3-page pdf; essentialstuff.org/wp-content/uploads/2011/06/Cheese-waxing_KKreamery_EsL.pdf); or

   Cheese Making: Waxing the Round (post; essentialstuff.org/index.php/2011/06/06/Cat/cheese-making-waxing-the-round/)
5. How to Make a Cheese Press (pdf; essentialstuff.org/wp-content/uploads/2009/02/cheesepress_esl_cmprs.pdf)
6. Cheese & Tofu Making (pdf; essentialstuff.org/wp-content/uploads/2009/02/cheesemaking_fwade1b_esl.pdf)
7. Yogurt & Kefir, from Powdered Culture (pdf; essentialstuff.org/wp-content/uploads/2009/02/yogurt-kefir_esl.pdf)
8. Culturing Milk: Making Yogurt at Home (6-page pdf; essentialstuff.org/wp-content/uploads/2011/07/Yogurt-photoEssay_EsL.pdf) or

   Culturing Milk: Yogurt (post; essentialstuff.org/index.php/2011/07/01/Cat/culturing-milk-yogurt/)
9. Using Kefir Grains (pdf; essentialstuff.org/wp-content/uploads/2009/02/kefir-advanced_esl.pdf)

Other websites

10. Beginning Cheesemaking: Ingredients & Equipment by Dr. Fankhauser
11. Basic Cheesemaking for 1 Gallon of Milk by Dr. Fankhauser
12. New England Cheesemaking Supply Co. (www.cheesemaking.com; 30% CaCl2 solution: www.cheesemaking.com/CalciumChloride.html
13. Leeners.com; 30% CaCl2 solution: www.leeners.com/cheese-ingredients-additives.html

Books

14. *Stocking Up*, by Carol Hupping & staff at the Rodale Food Center, from which she learned this process [For a peak inside, see Amazon]