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CreamLine

a new voice for little dairies

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The Wonderful World of Dairy Regulations

Are you registered as a Libertarian? Do you still play "Volunteers" at full blast on your car stereo – and sing along? Do you grit your teeth when someone tries to tell you what to do or how to do it? Do you have a diagnosed anti-authority complex? If you answered affirmatively to any of these questions, you may want to strongly consider taking up pottery instead of dairy processing.

It has been said that dairy processing is the most regulated industry in the country. It's hard to say if that's true or not but, because milk is an ideal growth medium for all kinds of critters, there's a lot that can go wrong. Milk is now shipped all over the country, transferred numerous times to different vessels, and processed in many ways, so there are frequent opportunities for contamination. On the consumer side, because milk is often recommended for children and pregnant women, the most revered people in our society (women and children first!), the demand for the safety of milk products is unrelenting.

State Regulations

There are a few states that still have exemptions for selling milk and milk products off the farm without oversight, but they are rare. Even those generally do not allow enough sales for a reasonable living; at best it is supplemental income. It's somewhat difficult to get information about exemptions, and some of it is conflicting. Sally Fallon of the Weston A. Price Foundation has been compiling data on state regulations for sales of raw milk and has agreed to let me reprint one of her web pages on pages 7 and 8. If anyone has information to add to this, please contact Sally (through the web page) or me. Incidentally, Sally will be writing an article for *CreamLine's* raw milk issue, Issue #8. Since raw milk is the theme of that issue I don't want to spend too much time on it this go-round. The RealMilk chart is included here because it also contains some information on selling milk and dairy products in general.

People often ask me if they can find their state's dairy regulations on the Internet. The answer is "yes and no." There is a list, with links, of state departments of agriculture on the World Wide Web at www.ink.org/public/kda/stateags.html. On its web page, my state of Virginia does list the **general scope** of the dairy regulations for grade A milk, milk storage, frozen products, milk content and manufacturing (cheese, butter, etc.) However, the regulations themselves are not part of the web site. If you are not on-line, contact your state agriculture department. The department's main switch-

Continued on page 3

ISSN: 1530-3500

In This Issue:

- Editor's Page p. 2
- Letters p. 2
- State Regs p. 7
- HACCP p. 9
- Resources p. 12
- Goat Lady Dairy p. 13
- Chef Kelly p. 14
- Tricks & Tips . p. 21
- Classifieds p. 23
- Events p. 24

Do You Know?

What economically important fungus is known to produce rennet?

Answer on page 23



From the Editor

This issue is a little too me-heavy, if you ask me. It wasn't intended to be. A couple of promised articles didn't come in. Peter Dixon didn't get a question this time – come on, somebody must have a question! – so we had planned to reprint an article he wrote for another small newsletter. The problem is, the newsletter hasn't printed the original yet! Ah, well. That article will work well in the next issue – the raw milk issue – which will also contain articles Sally Fallon, author of *Nourishing Traditions*, and Jo Robinson, author of *Why Grassfed is Best*.

The regulations and HACCP issue has been a difficult one to produce. There is so much material that it was very hard to distill it down to what is most important and give you enough information to enable you to find what you need. I hope that the resources and references will be helpful to you.

Because this issue turned out to be 24 pages long, I find it necessary to postpone reprinting Peter Dixon's second newsletter until the next issue because of printing and mailing costs. I'm sorry for the delay.

I did attend the ACS conference in California in August and learned a great deal, as always. Next year's conference will be August 2-6 in Louisville, KY, probably the farthest south the conference has ever ventured. Cheesemakers Judy Schad and Mary Falk are already planning the cheesemakers' day of the conference – it should be a winner!

Finally, I'm happy to report that *CreamLine* now has an ISSN (International Standard Serial Number) and is deposited at the Library of Congress.

Vicki Dunaway

Letters

Dear Vicky,

We are located in northern Delaware, and in the last 20 years or so have been surrounded by development. It's been a mixed blessing. On one hand it gives us a large customer base for our products, but on the other hand it makes operating our farm, in the traditional sense, much more challenging.

When we started producing ice cream in 1998, my mind set was that any milk we could sell as ice cream was a bonus, and the farm was still our number one priority. After the first year, however, I realized that our investment in ice cream equipment and facilities was too large to play second fiddle, and the more ice cream we could sell, the more profitable the farm

Continued on page 22

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Phone: (540) 789-7877
(before 9 p.m. Eastern time)

Fax: same, call first

E-mail: ladybug@swva.net

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See page 23 for information on classified ads.

Check out our web site at:
www.metalab.unc.edu/creamery

Continued from page 1

board (now there's an anachronism!) should be able to direct you to the right phone number. Probably the best way to get copies of the regulations for the product(s) you plan to make is to ask your dairy inspector.

No matter what type of milk processing you are doing, your most important resource will likely be the state dairy inspector assigned to your district. Dairy inspectors generally work for the state agriculture department. (I am not sure if this is always the case.) If you want to bottle milk, or make products such as yogurt or sour cream, you will also be regulated by the health department, which has its own inspectors. You will come to know these people intimately if you are in business for awhile, so it's best to be as friendly and cooperative as possible. If you are confrontational and argumentative, you probably won't get much leeway when it comes to the fine points. This is not to say you can't ever challenge anything the inspector says – sometimes these folks really aren't sure about how a rule applies to farmstead and small-scale dairies. And it is sometimes possible to show the inspector that what you are doing or would like to do accomplishes the goal of producing a safe, quality product. For example, Bob Bowen and his wife, Anne Bossi, were able to initiate a law for a special exception for farmstead cheesemakers in Maine.

“The law basically allows the production of farmstead cheese made in the home with a double boiler type setup, a water bath to maintain even temperature. The resulting cheese can be sold in all avenues, i.e. stores and restaurants. If sold to restaurants they must state on the menu that it is farmstead cheese and not pasteurized. (I have been told that the chances of getting inspected are very slim.) ...

“As to how we did it, we were called by the state to say they were coming to shut us down since we were turned in for selling unlicensed cheese. I asked if we could have persons here at the same time. Like our senator and local representative. They said good luck, but it would be okay. So when they showed up, we had our team here and they did all the talking, especially our senator who was a nurse in her past life, and from that meeting and the understanding of our problems as small producers, the law was passed. It took three years, but it happened. Along the way, we enlisted health people who favored raw milk and/or cheese, as well as a few mothers with small babies who feed raw milk and spoke with passion with the babies on their arms at the hearings. Very effective. And the one thing I did was to stay away and act from the sidelines. Plus we really

communicated with the ag committee and invited them to visit our farm or others that wanted to remain small. For us it didn't work, as we happened to grow out of the small stage fast and needed to get a commercial license within a few months, but only because I had been doing cheese unlicensed for a few years to get it going. Farmers' markets are a good outlet as they don't check often and when they do, they often don't know the laws dealing with dairy, and I bluffed them into thinking we could sell at farmers' markets just as we could at the farm.”

This approach isn't going to work for everyone. Maine has the reputation of being a civilized state full of rugged individualists. Virginia, on the other hand, is extraordinarily conservative and has a strongly negative history between a few confrontational farmstead cheesemakers and the agriculture department. Rebuilding trust between processors and the dairy services branch of the agriculture department here will likely take a long time. Most states are somewhere in between.

It is impossible to list in this publication the requirements of every state for dairy processing. It is amazing – and confusing – how differently the states approach dairy laws, particularly for the small scale. Unless you want to change your state's regulations, it's best to just obtain a copy of your own state's regulations and not worry about what anyone else is doing. It's just too frustrating. No, it's not fair that some folks can sell their raw milk from an unlicensed dairy in one state, while another requires a full-blown grade A dairy before the first drop of milk can be sold, but that's the way it is. It may be worthy to try to change the laws, but remember the prayer: “*God grant me the serenity to accept the things I cannot change, the courage to change the things I can, and the wisdom to know the difference.*”

The Pasteurized Milk Ordinance (PMO)

The *Pasteurized Milk Ordinance* (PMO) is a massive document containing all the gory details of how milk is supposed to be handled in the United States. Most states have adopted the PMO as their guide and so it is one of the best resources for learning the reasoning behind the many regulations that have been enacted and enforced for the safety of the consumer. Although I prefer not to argue here whether applying the PMO to everyone is a good thing, it is certainly true that as milk began to be collected from thousands of farms, mixed and transported long distances, there was increasing need for pasteuriza-

Continued on page 4

Continued from page 3

tion and standardization of facilities. The *Standard Milk Ordinance* was first produced in 1924, at a time when milk factories were getting larger and farther from the farm.

The *Pasteurized Milk Ordinance* details construction of everything milk touches, from the stable to consumer containers. It even contains information on the sanitary construction of wells and springs for your water source. In some cases, construction details are only suggestions, rather than regulations. For example, when discussing milkrooms, the PMO states:

Insulated milkrooms make protection against freezing easier and more economical, and offer the additional advantage of greater comfort for the operator. The factor of personal convenience frequently results in better performance by the operator, with subsequent benefits to milk quality.²

Clearly in this case, the PMO doesn't *require* an insulated milk room, but suggests that you would be more comfortable, your milk would be protected against freezing (which could be quite costly) and you may possibly produce better milk if you spend the extra bucks to insulate. For each requirement, the PMO gives the "Public Health Reason," in case you want to know. The PMO also lists standards of identity for milk and milk products. It is a valuable reference.

It's tempting to romanticize about the good old days, when it was easy to sell milk and milk products from the farm, unregulated, to make a little extra money. Although some farmers were conscientious and understood the importance of cleanliness and freshness, others were not, or were unscrupulous in their dealings. Homemade cheeses and butter varied widely in quality.³ Small crossroads creameries complained that farmers would hold their cream or milk too long, rendering it sour and unfit for use for butter or cheese. Some farmers would water down the milk to increase the volume. Sometimes a family would run the cream separator in the stable, or didn't make the effort to disassemble the machine to clean it after each use.⁴ Lack of refrigeration and a very primitive understanding of microorganisms further compounded the dangers of unpasteurized milk. The PMO and the states' regulations evolved over time, as consumers demanded safer dairy products. This is not to say that large companies have not seized on consumer fears as opportunities for consolidation and reducing competition, but for the most part the regulations are simply the

codification of good sanitary practice.

You may be able to obtain a print copy of the PMO from your dairy inspector or from your state department of agriculture's dairy branch. The 1999 version of the PMO is also available on-line in PDF or download format at the following web site:

<http://vm.cfsan.fda.gov/~ear/p-nci.html#pmo96>

Standards of Identity

Standards of Identity are rules within rules, used to define and delineate different products so that there is no question about what you are selling. Most state regulations contain definitions of various types of products, and the *Code of Federal Regulations* gives specific information on a number of cheeses and other dairy products, including moisture and fat content, what kinds of additives are allowable, and general production practices for each product. For example, have you ever wanted to know the difference between 'light cream' and 'light whipping cream'? The *Code of Federal Regulations (CFR)* is the place to find out. (Light cream contains not less than 18% butterfat, but less than 30%; light whipping cream contains not less than 30%, but less than 36%.) The CFR gives explicit information on several dozen types of cheeses commonly produced in the U.S., but many others are grouped under generic titles such as "semisoft cheeses" or "spiced, flavored standardized cheeses." You need to know the standards of identity for your products if you are labeling them for public sale. Your dairy inspector should be able to provide you with a copy of the standards, or you can search for them on-line at www.access.gpo.gov/nara/cfr/cfr-table-search.html. Some dairy products are under Title 21, the Food and Drug Administration. Others are under Title 7, Subtitle B in the Department of Agriculture. The *Code of Federal Regulations* is also a good source of information on equipment and facilities requirements.

Incidentally, cheese names are far less regulated in the U.S. than they are in other countries, particularly France, where many cheese names are protected by under A.O.C. (*Appellation d'Origine Contrôlée*) regulations. These rules may govern where animals graze, the origin and type of feed, the species and breed of animal, in what season the cheese is made, how the cheese is made, the shape and size of the cheese, and how the cheese is ripened and stored.⁵

Weights and Measures

If you sell a packaged product, you likely will have to comply with regulations regarding the weights and volumes of the product. Cheese and butter can generally be packaged in any quantity as long as the net weight is labeled, but some types of products can only be sold in certain sizes or types of packages. For example, you see milk mostly in half-pint, pint, quart, half-gallon and gallon containers. This is probably to prevent the consumer confusion that likely would result if milk could be sold in any amount in between. Again, your dairy inspector should be able to provide you with your state's weights and measures regulations.

Labeling

States have specific requirements about what must be on a label for food products. Labeling requirements will be in your state's dairy laws. Many people ask about the Nutrition Label required on most food products, i.e., that which includes caloric, fat, cholesterol, fiber, protein, vitamin and mineral content, etc. All major dairy processing plants are required to display that information on each package. Samples of each product must be sent to a lab for nutrient analysis by AOAC (Association of Official Analytical Chemists) standards, and a label with all necessary information affixed to the product. However, according to the *Code of Federal Regulations*:

... the product shall be eligible for an exemption for any 12-month period if, for the preceding 12 months, the person claiming the exemption employed fewer than an average of 100 full-time equivalent employees and fewer than 100,000 units of that product were sold in the United States.⁶

There is also reference to an exemption in the case where there are gross annual sales of less than \$500,000 or \$50,000 of food sold direct to consumers. (That section is somewhat unclear to me.) Be sure to check with your state officials on nutrition labeling requirements.

3-A Standards

Somewhere along the line, if you are in the dairy business, you will hear the term "3-A Standards." These standards specify such things as the type and quality of steel to use for equipment, how valves should be made for easy cleaning, what types of pumps to use for moving milk around, what kinds of plastic containers are okay

for dairy, etc. It is probably easiest to explain 3-A Standards by copying a statement from the 3-A Program's web page.

The 3-A Program formulates standards and practices for the sanitary design, fabrication, installation and cleanability of dairy and food equipment or systems used to handle, process and package consumable products where a high degree of sanitation is required. These standards and practices are developed through the cooperative efforts of industry experts. Its ultimate goal is to protect consumable products from contamination and to ensure that all product surfaces can be mechanically (CIP) cleaned or easily dismantled for manual cleaning. ...3-A criteria is universally accepted by equipment manufacturers, fabricators, users and sanitarians. The 3-A Symbol Council accepts applications from equipment manufacturers and fabricators for authorization to display the protected 3-A Symbol on their products conforming to these standards.⁷

The organization that develops 3-A Standards is private, and, if you want copies of their standards you have to buy them. You probably won't need to purchase copies unless you are developing a piece of equipment, such as a pasteurizer, that is required by your state to meet 3-A Standards. Let's say you wanted to develop a pasteurizer that you could sell to other small dairies. You would design the machine and then make an application to the 3-A Symbol Council. The Council requires a "company executive" to initial each paragraph of the applicable standard to signify that the equipment is compliant. Drawings or pictures of the equipment must accompany the application and the Council may request other information. This may not be as easy as it sounds. Robert Turner, U.S. representative of Pladot (a small-scale dairy equipment company in Israel)⁸ told us that his company found it necessary to fly an engineer to Israel for a week to be sure that Pladot's equipment would meet U.S. standards, because interpretation of the standards can be difficult. Now you begin to see one reason why there is not a surplus of inexpensive small dairy equipment out there.

In the event that you are interested in obtaining copies of 3-A Standards, you may order them through the web site (www.3-a.org/standards/, click on "Online Store"), either in print or PDF form. Hard (print) copies may be ordered by any of the following means of contact:

(800) 699-9277 - Toll free U.S. or Canada

(734) 930-9277 - From anywhere else in the world

(734) 930-9088 - FAX

Techstreet, 310 Miller Avenue, Ann Arbor, MI 48103

Dairy Practices Council Guidelines

In Issue #6 I included some information on the Dairy Practices Council, a nonprofit organization that has developed a large number of guidelines pertaining to “milk quality, sanitation and regulatory uniformity.” These guidelines are not the same as regulations, but governing agencies are involved in the preparation of the guidelines. They can provide useful information, say, for someone who wants to build a milk bottling plant or to figure out what size water heater will be needed for a new milking parlor. The latest brochure I have from DPC lists 74 individual guidelines, ranging from \$3 to \$8 each. There is also the option to buy them in sets: either the complete set of all guidelines (\$250), a Farm Set (\$145) or Plant Set (\$115). To learn more, contact the Dairy Practices Council at 51 E. Front Street, Suite 2, Keyport NJ 07735; phone (732) 203-1947. Or visit their web site at: www.dairyperc.org. You can order guidelines through the Web site.

Best Management Practices (BMPs), Good Management Practices (GMPs), Code of Best Practices

Many organizations – professional, private and governmental – develop BMPs or GMPs for use within their respective fields to set voluntary standards. Your dairy extension agent can probably provide you with current BMPs for such things as milking and pasture management; these are generally free of charge. Various organizations within the dairy processing industry publish their own GMPs or BMPs, but many are way beyond the scope of the farmstead dairy. Fortunately, these are beginning to be addressed by small-scale producers themselves, especially for farmstead cheesemaking.

The Vermont Cheese Council has published a *Code of Best Practices*, adapted from a similar code developed by the British Specialist Cheesemakers Association. This paperback book is available for \$15 from the Council at 116 State Street, Drawer 20, Montpelier, VT 05620; (888) 523-7484, e-mail vtcheese@together.net. I’m unaware of published codes from any other state, but I do know that cheesemaker Mary Falk in Wisconsin is working with officials there to develop a farmstead cheesemakers’ licensing and training program that is distinct from that required for industry-scale cheesemakers. I’d appreciate contact from anyone who knows of similar work already done or underway in other states.

Regulations and the costs they incur can be overwhelming and frustrating, and may seem to present an impenetrable barrier to people who just want to make a little cheese and sell it at the farmers’ market. There are many, many (mostly) goat milk producers and cheesemakers who quietly (and illegally) sell their products to friends and others who learn about them by word of mouth. This is a risky way to go, but the risk is relatively low as long as the milk and products are clean and handled properly, and as long as the seller does not flaunt his or her wares too conspicuously. Neil Hamilton, lawyer and author of *The Legal Guide for Direct Farm Marketing*, points out that historically there have been very few lawsuits aimed at small farmers who sell directly. Nevertheless, he warns that if you do happen to run into that rare person who decides to sue you for a real (or manufactured) food-borne illness, your assets are completely unprotected if your operation is not a legal one.⁹ And that mom whose child is in the hospital with severe diarrhea will quickly lose her warm and fuzzy feelings about small farmers when the doctor suggests that the problem just might be caused by the illegal unpasteurized yogurt the child ate that day.

Except in the few cases where an exemption applies, those who are serious about wanting to start a small-scale dairy plant of any size must comply with regulations. Still, it is quite possible to get into dairy processing for significantly less than the cost of opening a small restaurant. Every business requires some level of investment, and it’s up to you to decide if you can get enough return on your investment to make it worth your while. ☘

¹ E-mail response from Bob Bowen on e-mail discussion group, reprinted with his permission. To join send e-mail message: Artisan_Cheesemakers-subscribe@onelist.com.

² U.S. Department of Health and Human Services, Public Health Service, Food and Drug Administration. *Grade “A” Pasteurized Milk Ordinance*, 1995 revision, p. 132.

³ McMurtry, Sally. *Transforming Rural Life: Dairying Families and Agricultural Change, 1820-1885*. Baltimore, Johns Hopkins University Press, 1995.

⁴ Totman, Claire C., Gl. L. McKay and Christian Larsen. *Butter*. New York: Wiley & Sons, 1939. (and others)

⁵ Harbutt, Juliet. *The World Encyclopedia of Cheese*. New York: Lorenz Books, 1998.

⁶ *Code of Federal Regulations, Title 21*, chapter 1, part 101, sec. 101.9.

⁷ “About 3-A Standards” web page, www.3-a.org/standards/

⁸ Pladot, (301) 733-1007, turner.r@erols.com.

⁹ Hamilton, Neil D. *The Legal Guide for Direct Farm Marketing*. Des Moines, IA: Drake University Agricultural Law Center, 1999. Available from the Center, Des Moines, IA 50311 for \$20 ppd.

State Regulations: The following information is from the Real Milk web page: www.realmilk.com

(Editor's note: The RealMilk site is for consumers; dairies are certainly allowed to sell raw milk to co-ops and processors. Although this may be understood by most, it's not obvious to everyone. Also note I've modified the pages slightly because of space considerations.)

In an attempt to help consumers find locally produced Real Milk, we have compiled the following list describing the potential availability and legal situation on a state-by-state basis. We cannot vouch for the accuracy of the following list. If you have corrections or additions, please send them to Sally Fallon at WestonAPrice@msn.com, or Real Milk, PMB 106-380, 4200 Wisconsin Avenue, NW, Washington, DC 20016

AL - It is illegal to sell any type of milk without a Class A Dairy License, implying that sale of raw milk is illegal. Cheese requires a Class B Dairy License. Could someone from Alabama please update us as to the situation there?

AR - Dairies may sell up to 100 gallons of raw milk per month.

AZ - Raw milk is available for sale in pet stores, for animal consumption only. A black dye is added to the milk (which turns it a blue color) to discourage human consumption. It is not known what is the toxicity of the dye.

CA - Certified raw milk may be sold in stores. Raw milk is currently available from Claravale Dairy in northern and central California and from Steuve's Dairy in Southern California. Other small dairies are selling raw milk directly to the consumer. California residents, please provide us with names of dairies now selling raw milk. Very little milk in California comes from grass-fed herds. Aajonus Vonderplanitz is mounting a campaign to make raw milk more widely available in California. He can be contacted at optimal@earthlink.net.

CO - Grade A license needed to sell milk. Illegal to sell raw milk.

CT - Raw milk may be purchased at the farm and is available in some stores by special order.

FL - Illegal to sell raw milk.

GA - Raw milk available at the farm "for pet consumption only."

IL - Illegal to sell raw milk.

IN - Raw milk available from the farm "for pet consumption only."

KS - Raw milk may be purchased from the farm.

KY - You may purchase raw goat milk with a written prescription from a licensed medical doctor.

MD - Raw milk may be purchased at the farm.

MI - Raw milk available from the farm "for animal use only."

MN - Raw milk sales permitted at the farm.

MS - Raw milk sales permitted at the farm.

MO - Missouri state law allows unlicensed sale of raw milk and cream direct from the producer to the consumer. The state milk board disagrees and tells all who inquire that it is not legal to sell raw milk without a license in MO.

NE - It is not illegal to sell raw milk as long as it is for personal use and not resold.

NH - Raw milk may be purchased from the farm. Many herds are grass-fed during the warm months. Several biodynamic farms are supplying high quality dairy products.

Continued on page 8

NJ - Illegal to sell raw milk.

NM - Milk is regulated on a county-by-county basis. Raw milk is unavailable in Albuquerque but can be purchased in Santa Fe from at least two stores, including a health food store called Market Place.

NY - Raw milk available if the container reads "Not for Human Consumption."

NC - Milk sales from the farm for animal use only.

OH - Raw milk is sold by Young's Dairy in Yellow Springs, which apparently has a grandfathered permit to sell raw milk. Our information is that no new licenses for raw milk sales have been issued.

OK - Raw milk sales allowed at the farm. Customer must provide own container.

OR - 100 gallons per month of raw milk may be sold from the farm.

PA - Raw milk may be purchased at the farm. Many herds are grass fed.

SC - According to Suzie H: "SC is a 'try to sell it and we will let you know the laws if you make any money.' Repeated efforts to speak to the Clemson Extension Service, Dairy Board, etc. have never gotten a return phone call.

TN - No milk sales from the farm allowed, hence no raw milk available.

TX - You may sell raw milk and raw milk products for human consumption from the farm only and only if you obtain a Grade A "Raw for Retail License" from the Texas Health Department. There are a few Grade A Raw for Retail goat milk dairies in the state but no cow milk dairies. Raw milk for pet consumption is controlled through the Texas Animal Health Commission. A license is also needed and a black food colorant must be added to the milk, which turns it a blue color.

UT - Raw milk may be purchased from the farm. There is still one dairy selling raw milk, but they have recently been subjected to harassment by the state health department.

VT - Small quantities of raw milk may be sold on the farm. Many herds are pasture-fed. Contact Rural Vermont (ruralvt@sover.net) for a list of conscientious milk producers.

VA - Illegal to sell raw milk. Grade A license required to sell milk, grade B license required for cheese. Non-bovine milk cheeses are currently unregulated under the dairy laws but do fall under the food laws (such as those for baking and making jams and jellies for sale to the public). Officials are expected to close the cheese loophole in the not-too-distant future.

WA - Raw milk can be legally sold in stores provided it carries a mandatory label stating that it is possibly harmful to one's health, particularly to the elderly and children. Unfortunately, after the Odwalla juices e coli scare, sources of raw cow and goat milk pretty much dried up. There are reports that it is still available directly from the farm, and apparently it is sold by a monastery on Bainbridge Island.

WV - Illegal to sell raw milk, but many people manage to find it anyway. West Virginia has a new special exemption for certain farmstead cheesemakers making traditional cheeses from cow's milk.

Canada - Illegal to sell raw milk but a biodynamic dairy farmer sells raw milk from the back of his truck in Toronto. Contact Consumer Health of Canada for details. (416-490-0986)

Information is needed for the following states: **AK, DE, HI, ID, IA, LA, ME, MA, MT, ND, NV, RI, SD, WI, WY**

HACCP for the Small Dairy – An Introduction

Everyone in the food business is talking about HACCP these days. In reaction to strong consumer demand for better assurance of food safety, state regulators are looking at seed-to-table programs that will require documentation of food production to cover every step of the process of bringing a food product to the American consumer. Chances are you would rather read about cheese or yogurt, but food safety is an issue every producer needs to be concerned about. The more you know, the more you will understand why regulators are so insistent upon certain kinds of equipment and practices. Even if you produce dairy products only for your family, don't skip over this article – learning how to identify and prevent food safety hazards can increase your awareness of potential dangers and help you to produce higher quality products.

First, let's not assume that everyone knows what HACCP (usually pronounced has'-ep) stands for, much less what it is all about. Hazard Analysis Critical Control Points (HACCP) are points at which a hazard might be introduced into a food product. These points differ on every farm and in every plant; thus each producer must develop his or her own HACCP plan. Currently, HACCP is required in the meat and seafood industries but not in dairy. That is expected to change in the near future, and in some cases retailers are demanding that producers of dairy products have HACCP plans in place.

I recently heard an HACCP story from a small-scale cheesemaker in North Carolina. Without notice to suppliers, a large health food chain initiated an HACCP program in their stores, requiring that cheese arrive at the store at a temperature in the low 40s. When the cheesemaker arrived with their order, the buyer stuck a probe into a cheese (without obviously cleaning the probe!) and announced that the cheese was several degrees too warm and refused the shipment. This type of scenario is likely to become more commonplace.

But back to HACCP. **HACCP does not override other requirements.** Dairy plants and equipment will still have to comply with the *Pasteurized Milk Ordinance* (PMO) and state laws. Established good management practices (GMPs) must be followed. What HACCP will change, however, is the method of inspection. HACCP places the burden of finding and correcting food safety hazards on the producer, instead of on the inspector. A HACCP plan must be approved by the inspecting agency, and then the inspector's job will be to see that the producer is following the approved plan.

HACCP was originally developed to protect astronauts from food-borne illness while in space. The Pillsbury company developed a system of continuous monitoring and zero defects to meet this need. Instead of attempting to find contaminated food before it reached the consumer, the idea was to prevent food from becoming contaminated in the first place. *HACCP deals with food safety, not food quality.* In a HACCP system, the entire food production process is scrutinized, monitored and corrective action taken when necessary.

The Seven Steps of HACCP

Step 1: Hazard Identification

In order to identify hazards in an operation, it's important to know just what it is you do – in detail. This is a lot like the exercise of describing to an alien being exactly how to tie a shoe. You can assume nothing. You may even have to tell the creature to bend over and look at his feet. When you do something every day it's easy to overlook the fine points of your operation. Your first step in developing an HACCP system, then, is to make a flow chart of every step of your procedure. This sounds tedious, but you only have to do the entire chart once, and the exercise of preparing it may make you aware of places where you can become more efficient. A separate flow chart must be created for every product that you make, since procedures will differ, but the first one is the most difficult. If you are a farm-

Continued on page 11

Continued from page 9

stead processor, you must include your milking procedure and there may even be places in your grazing plan where hazards might be introduced; for example, a muddy area could be a haven for microorganisms that may contaminate the animal's milk. While you are preparing the flow chart, make note of places where hazards may be introduced.

There are three basic types of hazards to watch for in each step, followed by some examples of each:

Physical: hair, jewelry, ball-point pens; glass, plastic, wood metal, stones, fingernails and nail polish, dead insects, dirt, dust, lint, paint, manure, chewing gum

Chemical: antibiotics, detergents and other sanitation chemicals, leachates from heavy metals, pesticides, ointments from hands

Biological: bacteria, viruses, yeasts, unwanted molds, live insects or rodents, natural toxins, food allergens

Step 2: Identification of Critical Control Points

Once hazards are identified, the next step is to determine your **critical control points**, or points "which, if they were not present, would result in a 'contaminated' food which would result in a problem for the intended consumer. These are points where you may impart control that will not be reduced, prevented or eliminated in a step downstream from the site."¹ Another definition is "a point, step or procedure at which control can be applied and a food safety hazard can be prevented, eliminated or reduced to acceptable levels."²

Many hazards can be prevented through the use of good management practices (GMPs). For example, wearing hair nets prevents the introduction of employees' hair into food products; frequent handwashing is an effective way to thwart the spread of microorganisms; thoroughly rinsing containers avoids contamination by cleaning products. *These are not critical control points.*

"The critical control point defines where a control must be put in place. The control point is an action taken to control a hazard."³ Control points include GMPs, sanitation programs or company policy. Some examples of a critical control point include:

- (1) ensuring the acidity during the cheesemaking process is correct;
- (2) maintaining pasteurization temperatures for the required time;
- (3) maintenance of proper temperatures for storage of fluid milk.

Note that all of these things are measurable and should be as objective as possible. See page 8 for a "Decision Tree" to help you decide what is a CCP and what is not.

Step 3: Establish Limits

Once you have a measurable critical control point, you must set acceptable parameters. In the three examples cited above, you might set the outside parameters as:

- (1) Acidity required at particular steps in the cheesemaking process. For example, in making farmhouse cheddar, the acidity should be 0.75-0.85%, or pH <5.3, before proceeding to milling.
- (2) The temperature of milk being batch pasteurized must remain at least 145° for 30 minutes, as recorded by the recording thermometer. There would probably be an upper limit also.
- (3) Milk must be stored at or below 40° in farm bulk tank. The lower limit would be just above the freezing point.

Step 4: Determine How to Monitor Critical Control Points

The above CCPs can all be monitored using measuring devices – thermometers, acidometers, pH meters, giving definite, objective results. In a large plant, one might have a critical control point to determine whether any foreign objects had contaminated the product by passing the product through an x-ray machine. Visual inspection might be used for be sure packaging is properly applied. It is also necessary to determine who will check the control point and when.

Step 5: Establish Corrective Measures

What is the plan of action if parameter limits are breached? Suppose the pasteurizer temperature drops under 145° or the pH doesn't drop to 5.3 within a specified amount of time. What will you do to bring the process back into control, if that is possible? In some cases there may be no corrective measures except to dump the product in the chicken yard.

Continued on page 12

Step 6: Keep Effective Records

Checkoff sheets with space for initials, recorded values, and time should always be readily available in the area of the CCP. There should be space on the sheet to make notes about steps taken to correct any deviations in the system. Once filled in, sheets should be appropriately filed where they can be retrieved at a moment's notice.

Step 7: Verification

An outside entity (inspector) will check to see that the HACCP system is in place and being followed as planned. In-house verification should also be performed on a regular basis. The HACCP plan must be updated whenever something is changed in the process that will affect the critical control points. HACCP will be most effective when all employees are involved in its development and implementation. It is important that accurate observations are recorded, including deviations from the norm, and that employees don't just get in the habit of marking the check sheet without performing the check.

The HACCP plan is the written document which is based upon the principles of HACCP and which delineates the procedures to be followed to assure the control of a specific process or procedure. It lists team members and responsibilities, product description and use, and a flow diagram. The HACCP system is the implementation of the HACCP plan.⁴

This article is intended to be only an introduction to HACCP, to make *CreamLine* readers aware of the basics of this system, since it is expected to be required for dairy processors in the not-too-distant future. HACCP training for producers and processors is becoming more widely available; check with your dairy inspector or dairy extension agent for training programs in your region. Other programs are listed on the Hometown Creamery Revival web page, www.metalab.unc.edu/creamery.

¹ From *HACCP and the Specialty Cheese Maker: A presentation for the American Cheese Society* by Todd Jay Pritchard, Ph.D., presented at the 1999 American Cheese Society conference cheesemakers' program.

² From HACCP program by Dr. Susan Sumner at Virginia Dairy Quality Control Conference, September 1999.

³ Dairy Practices Council. *Hazard Analysis Critical Control Point System – HACCP for the Dairy Industry*. Publication DPC 55, August 1996, p. 2.

⁴ Sumner.

Resource Reviews

HACCP: Principles and Applications, edited by Merle D. Pierson and Donald A. Corlett, Jr. 1992. New York: Chapman & Hall. Available from *The Cheese Reporter*, 4210 E. Washington Ave., Madison, WI 53704. www.cheesereporter.com. Also available through inter-library loan. Hardcover, \$64.95.

This is not a book you would want to cozy up with next to the fire. Still, it contains important information for anyone in the food processing business. As a result of the numerous incidences of contamination in the food industry, HACCP (Hazard Analysis Critical Control Point) procedures are now mandatory for most meat processors. It is just a matter of time until an HACCP plan is required of other food producers, processors and preparers, since consumers and retailers are demanding it. Food safety officials are developing "seed to table" food safety programs that will require everyone who touches food to formulate and implement a plan for identifying "critical control points" at which food safety might be compromised, and to monitor and document what happens at these points. The paperwork need to comply sounds scary, especially for small-scale operations with few employees, but it need not be so intimidating. *HACCP: Principles and Applications* is an excellent introduction to the subject, readable by lay people even though written by specialists in the field. (I found it easier to understand than *Progressive Farmer* magazine.) Individual chapters on the seven principles of HACCP follow an introduction. The final chapters of the book outline case studies of HACCP implementation.

HACCP (Hazard Analysis and Critical Control Point) Materials. Compiled by Peter Dixon for the Cheesemakers' Day seminar at the 2000 American Cheese Society conference. Contact Peter Dixon at (802) 387-4803, Rt. 2, Box 254, Putney, VT 05346. (*I was unable to contact Peter in time to get a price for this packet.*)

This is a wonderful packet of materials that I found, just before going to press, in my folder of stuff collected at the American Cheese Society conference. (Sometimes it takes me awhile to go through all the information I've gathered.) Peter introduces HACCP, gives definitions and provides examples of critical control points for farmstead cheesemaking. There are also a couple of completed sample HACCP programs and helpful tables. ☘

Goat Lady Dairy Shares All

The Tates are happy with the size of their goat cheese operation. In fact, they'd like to get a little smaller, or at least to milk fewer goats. Thirty goats provide them with enough milk to give their cheesemaking a "good rhythm," they say, and so Steve, Ginnie and Lee Tate were willing to bare their souls and open their doors to eighteen prospective competitors for two days at their spacious and accommodating cheese plant/milking parlor/visitor center in central North Carolina. Not that Wanda B. from Louisiana or Cindy K. from Texas would be direct competitors, and even Portia M. from an hour away plans to make cow milk cheese. Although a few of the attendees were goat milkers who traveled only a short distance to attend the advanced cheesemaking workshop sponsored by the Hometown Creamery Revival and Goat Lady Dairy, the Tates feel there is room in the market for their cheeses. Interest in goat cheese is growing – and besides, Steve (the research and development specialist of the cheesemaking team) likes to play with new recipes, and is adding more variety to the dairy's offerings all the time. But more on that later.

"Cheesemaking is like surfing, or babysitting an eight-year-old," said Steve in one of his more sagacious moments. "You must adapt to conditions and always be there, but not necessarily right on top of the situation." The Tates knew they would be spending a lot of time in their cheese plant, and so they decided to build a cheesemaking plant that would be comfortable and pleasant, rather than improving their homes, where they would mostly only sleep. Part of their mission was to share information and to open their farm to visitors, so a large part of Goat Lady Dairy consists of a big open room, where they hold meetings, open houses and "Dinner at the Dairy." They have a waiting list of people who want to pay thirty-five bucks to enjoy a gourmet meal, prepared mostly from fresh farm foods, while watching the goats being milked through a picture window. (It sounds awful, but is really quite entertaining.) Additionally, Steve said, the office has a bed for naps,



and a good stereo system for company and catching up on the news. There is also a TV in the make room so no one misses Oprah. The Tates have arranged things so that the dairy is the public space, while their homes remain private.

In case you are wondering, Steve was able to leave his day job for full-time work in the cheesemaking business, but his sister Ginnie was the original Goat Lady. She was dubbed with that name, like so many other goat cheese makers, by customers who heralded her arrival with the (originally illegal) goat cheese. Ginnie still works as a nurse on a weekend schedule because that position offered good flexibility and good pay and benefits for the hours put in. She is counting the weekends to retirement, when she will be able to help with the Saturday markets. Ginnie is the businesswoman of the bunch. She takes care of a lot of the marketing details, makes the calls to accounts each week, rolls, wraps and sorts cheese according to destination. Ginnie was the commandant who kept the action- and information-packed cheesemaking class on course.

Continued on page 16

Chef's Corner

with
Kelly Shepherd



Fresh Mozzarella in water is one of the truly great pleasures of life. I absolutely love the mild softness of good *mozzarella di bufala*. Hats off to the people who milk these creatures! They look uncooperative at best. It would be great to get locally made buffalo Mozzarella, but I think the only ways to obtain this treasure are by mail order, by making a long drive to a big city, or through a Mafia connection. (There's also the generous friend who makes cheese and gives you some, but that falls into the "connected" category.) Fresh Mozzarella made from the milk of other animals is almost as good – most of us will settle for just being able to find good fresh cheese.

My favorite way to use fresh Mozzarella is in the classic *Insalata Caprese* (Capri Salad). Best of the season tomatoes, slices of fresh Mozzarella and whole basil leaves drizzled with olive oil and sprinkled with coarse salt – the essence of summer on a plate. But alas, summer is over. The following recipes are not uses of Mozzarella you would think of first, but they really are delicious!

Fresh Mozzarella Poached in Tomato-Basil Sauce

(Adapted from *Lidia's Italian Table* by Lidia Bastianich)

Use the best fresh Mozzarella you can find or make. This recipe is easy and very satisfying.

4 tbsp extra-virgin olive oil
1 garlic clove, crushed
6-8 large ripe tomatoes*
4-5 fresh basil leaves or 1 tbsp of pesto
salt and pepper
1 tub of *bocconcini* ('little mouthfuls') or *ovolini* ('little eggs') - both are Mozzarella balls in water
(the tubs I get contain three largish balls, around half a pound)
country-style bread or *bruschette*

Heat oil in a medium saucepan. Sauté garlic. Add tomatoes and simmer, stirring occasionally, for 20-30 minutes or until it thickens slightly. Season with salt and pepper. Tear basil leaves into the pot. Remove from heat. Add cheese to hot sauce so that the balls of cheese are about half submerged. Let them sit in hot sauce for ten minutes. Meanwhile, prepare *bruschette*. Slice bread and grill or broil until browned. Brush lightly with olive oil and rub with a peeled garlic clove. Carefully ladle sauce and cheese into a bowl and attack with bread. Messy and incredibly delicious.

* you could use a quart or so of those nice garden tomatoes you canned recently – just don't add too much liquid; save extra liquid for soup.

Another great recipe on page 15



Kelly Shepherd is The Invisible Chef, an in-home food service alternative in southwest Virginia. Kelly turns top-quality fresh foods into gourmet meals for busy people. She does the shopping, cooking and cleaning; the client just comes home, warms up the meal and delights in The Invisible Chef's outstanding cuisine. Kelly writes this column for CreamLine on a regular basis.

Crochette (Italian Cheese Croquettes)

(Adapted from a recipe in *Completely Cheese* by Anita May Pearl)

2 c. cooked, cooled rice (leftover risotto is good)
2 eggs, beaten
½ cup Parmesan cheese, grated
fresh-ground black pepper
6 oz. Mozzarella, cut into ½" cubes#
4 oz. Prosciutto ham, cut into ½" squares
fine, dry bread crumbs
oil for frying

In a bowl, combine rice and eggs. Break up any lumps of rice and be sure each grain is coated with egg. Fold in grated Parmesan and season with pepper. Put about 1 tablespoon of rice mixture in your palm and then take some of the Mozzarella and some ham and bury it in the center of the rice. Use another tablespoon of rice to cover the filling completely. Shape into a ball and roll the ball in bread crumbs. Heat about an inch of oil in a heavy-bottomed skillet. When oil is hot (375°) carefully place about five *crochette* at a time into the pan and fry until golden brown all over. Drain well on paper towels and serve immediately as an appetizer. I like to serve them with a nice, thick, zippy tomato sauce for dipping.

try to use an aged Mozzarella, or even smoked; less moisture is what you want here.

⌘

Corrections from Issue #6, the Mozzarella issue:

Paul Stephan of Blue Ridge Mountain Dairy, featured in that issue, called me to make a few additions to the discussion of making Mozzarella. He stated it is important that calcium be drained off; calcium demineralization is critical, and decreasing pH is a guide to assure that this process is taking place. He says with mesophilic cultures, reaching pH of 5.4 isn't an absolute necessity.

At the ACS conference I had the opportunity to talk with an Italian cheesemaker about impastata. In my article on ricotta, I said that, in the case of whey cheese, I wasn't sure what to call the lump of precipitate that went to the bottom of the pot rather than rising. In the case of whole milk, they call that lump "impastata," but this gentleman said the term doesn't apply in the case of whey. "Only whole milk is used for impastata," he stated emphatically. He also told me that the Italian cheesemakers Kosikowski interviewed wouldn't tell K. the truth because they knew he was writing a book and they didn't want to give away their secrets. Hmm.

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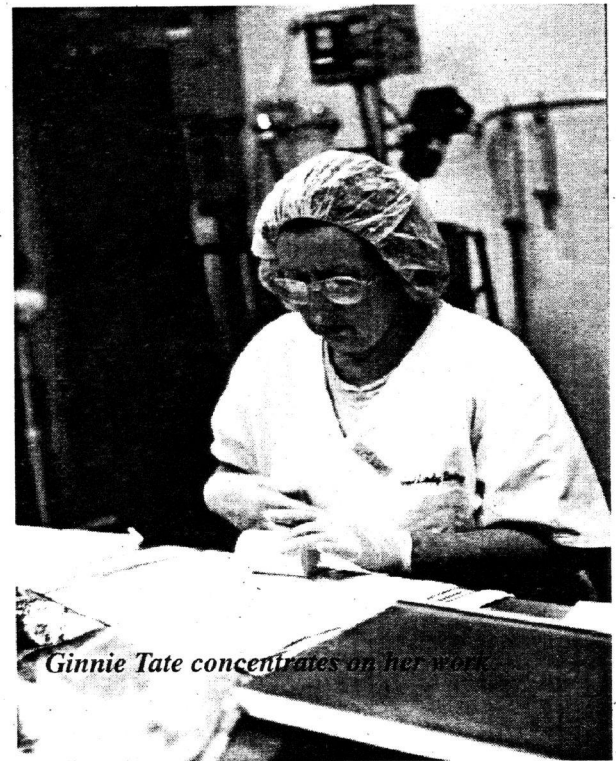
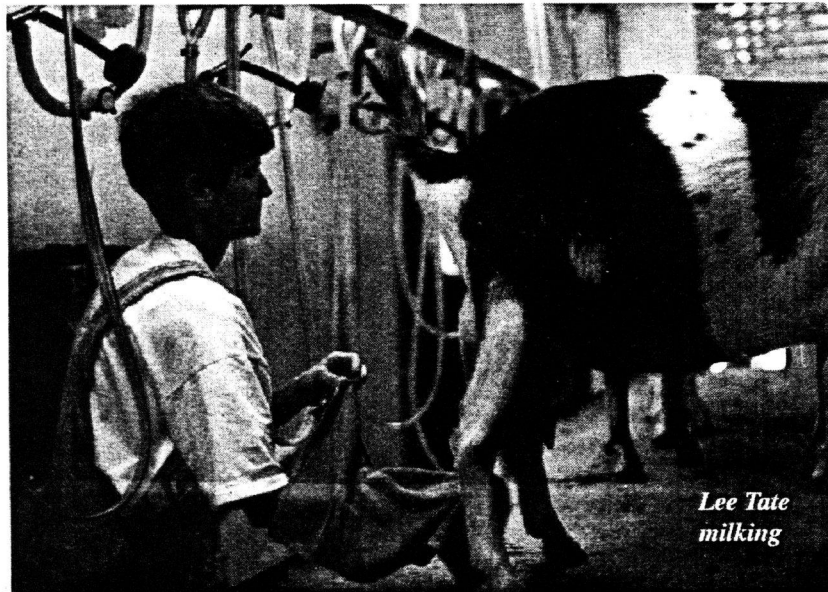
(732) 203-1947

Web site: www.dairypc.org

Continued from page 13

Ginnie has worked to become more efficient in the use of her time. She described initially being frustrated at cleaning house while paying people to work in the garden. She says, "We decided to find people who like to do things we don't like to do very much," and Goat Lady Dairy was even able to find a neighbor who likes to clean up after the cheesemakers make their mess. They also hired another neighbor, a young woman who helps with the cheesemaking and packaging, all the while learning the business from the inside. Steve and Ginnie agreed: "We gain wealth when the neighborhood increases in wealth," and they encourage their neighbors to take ownership of the dairy. These good people can be called on in an emergency or when the Tates need a break. Ginnie called this arrangement "hidden profits."

Lee Tate is Steve's wife. She is in charge of goat care and obviously enjoys her work. Steve claimed that Lee is the "introvert of the three" of them, but Lee sure held her own when it was her turn to talk. Most of the class participants were goat owners, so they had plenty of questions about the animals' care. From the very beginning, the Tates emphasized how important it is to put much time and energy into feeding the animals, "because the cheese is only as good as the milk." Although they have not developed a complete intensive grazing program, the animals are out on pasture most of the time when it is not raining. Goats don't like being wet, and Lee uses a manure pack in the loafing area during rainy periods and during the winter. To make a manure pack she spreads straw or poor hay and fluffs it daily, adding more as necessary, aiming for a 40:1 carbon to nitrogen ratio. The carbon comes from the straw, nitrogen from the manure. This ratio is important for good composting and to keep odors down. During the winter, the



manure pack gets quite thick and heats up, providing warmth for the animals. In the spring, they hire a neighbor to move the manure pack to the compost piles with a Bobcat. The pack is likewise removed, down to the dirt, after a rainy period ends to help prevent fly problems. (This small-scale poop scooping is another chore that gets hired out to young neighbors— at \$8 an hour.) Flies breed in decaying organic matter, so it's best to get the manure and bedding out to the compost or pasture. The Tates dislike using chemicals for fly control, but do use a pyrethrin-based spray in the milking parlor and in places where it is hard to clean. Lee said that if they had to do it over, they might have separated the goat barn from the milking parlor better to keep the flies out of the parlor.

Continued on page 17

The goats are fed with good alfalfa hay, which really makes the best milk. The Tates place a lot of emphasis on the goats' nutrition, which has impacted their veterinary bill for the better. They have also worked to improve their genetics; now 30 goats produce as much as 40 did before, and they hope to reduce the herd size to about 24 animals. Currently each goat produces an average of $\frac{3}{4}$ gallon of milk per day over the year; generally Steve and Ginnie have about 45 gallons per day to work with during the lactation season. In spring, extra milk is fed to baby goats; since this practice was introduced, they have not had problems with scours, and the babies have been healthier than when they were on milk replacer. Spring, of course, is the most difficult and demanding time of year for goatherds, and the Tates are still working on the best ways to get through spring. They are looking into ways to get more help, more nurture for themselves, and more "propping up" to get them through the long hours. They have tried apprentices, who don't always work out, but have had some success with "kidding interns," who come to the farm from late February through April. The interns bottle feed babies, help with birthing, heat treat milk, help with milking chores, and may help with cheese. Some stay overnight on "kid watch."

Aside from her skills in animal care, Lee Tate is also a gourmet cook who heads up the kitchen during the farm dinners. Her herb and goat cheese-stuffed meat loaf is awesome!

Cheesemaking

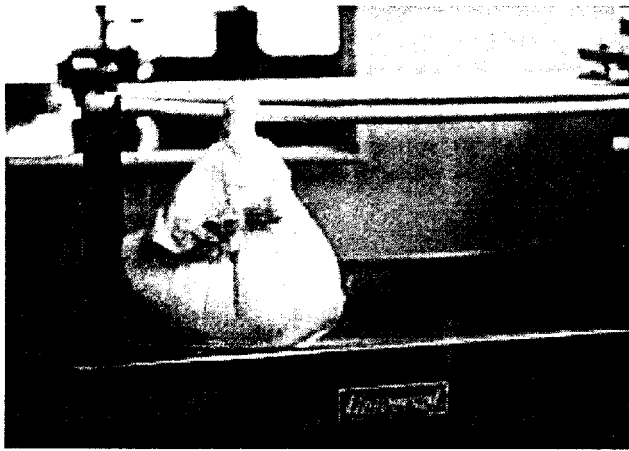
Cheesemaking for the class was spread over the two days; our lessons were incorporated into Goat Lady Dairy's usual routine for making cheese. Steve said it takes a long time to figure out how to work a new cheese into his schedule so that pasteurizer use, aging and refrigerator space, room temperature, labor and other requirements work in smoothly between those for other cheeses. We spent time in a classroom situation out in the great room, then would get up when it was time to do something to the cheese. Then Ginnie would herd us all back into the big room for the next topic.

The first cheese Steve demonstrated was Goat Lady Dairy's award-winning Camembert (second place in the soft-ripened goat or sheep cheese category at the American Cheese Society's competition in August). Steve

makes the cheese directly in the pasteurizer, a 44-gallon machine custom made by a local stainless steel fabricator. After we all donned our stylish blue hairnets, Steve showed us what a "clean break" is supposed to look like – first when it wasn't quite ready, then when it was. He told us that the knife or finger should cut through the curd cleanly, that the cut should fill with whey, and that the whey should be clear. He also said there were subtle clues, including the sheen on the curd and how the curd jiggles, which the cheesemaker learns with practice. When the curd was ready to cut, he used a long knife to cut vertically and horizontally, wearing long gloves (to the elbow) for cutting the curd in the bottom of the vat. Someone asked whether Camembert was supposed to only be cut vertically; Steve said he had tried that, but it didn't drain fast enough for him.

As he worked, Steve shared information on the types and amount of culture he uses for Camembert. He rotates MM 100 and MM 101 from Dairy Connection¹ because of a problem they had with phage, a bacteria-eating virus that gets established most easily when the same culture is used constantly. He adds 25% extra culture late in the season to compensate for higher solids in the milk. Rennet is added after stirring in the culture for about 7-10 minutes. After consulting with Peter Dixon, Steve began adding *Geotrichum* (buttermilk mold) to the milk along with the *Penicillium candidum* (white mold), just after adding rennet. *Geotrichum*² is a sort of "placeholder;" it grows on the surface of the cheese after just a few days, competing with blue molds and other opportunists, until the white mold takes over and covers the entire surface. The curd sets 1½-2 hours before cutting.

Once cut, the curd is allowed to "rest" for about 15-20 minutes, then whey is dipped off. If the whey is to be fed to animals it is mixed half and half with water. (Steve says they don't like to feed whey when it is raining, because it makes the goats pee in the barn.) The cheesemaker dips a portion of the curd into muslin bags (beautifully made by Ginnie's elderly mother); the bags are closed with orthopedic Velcro and hung to drain for Crottins, popular little lightly ripened (one week old) cheeses that chefs like to use on their cheese plates. The Crottin curd hangs until it gets a little firm, beginning to pull away from the bag, then filled directly into Crottin molds, which are tall cylinders, forming a small round cheese that looks like a baby Camembert. Once the muslin bags were emptied Steve said, "I want to say this so



Continued from page 17

you will remember it. Wash your cheese cloths and bags separately from your personal wash, preferably in a separate machine, so that your customers won't find pubic hairs in their cheese." We got it.

Once unmolded the Crottins are kept unwrapped in a 54° refrigerator, where they develop the white mold. They are ready for sale the following week. Steve said that the pre-drainage in the bags makes the cheese different from Camembert because of changes in pH and the way the bacteria grow, as well as the density of the curd; these changes affect the texture and flavor.

Enough curd is saved for the number of Camembert molds Goat Lady Dairy owns; this curd is carefully dipped into the molds to drain. Once the cheese begins to pull away from the edges of the mold (after about six hours), Steve begins flipping them; each cheese is flipped 4-5 times (30 minutes between flips), then is left in the mold overnight. The room temperature is gradually reduced to 68° for the overnight period. In the morning the cheesemaker removes the cheeses from the molds, salts them on both sides and edges (with Kosher salt) and places them on racks; the second night he turns the temperature down to 65° while the cheeses dry. Steve emphasizes that the cheeses must be well dried for best results. When dry, the edges of the cheeses should have turned off-white and you cannot see or feel moisture on the cheese surface. Then they are ready to be moved to the dedicated refrigerator, outfitted with a temperature controller (available from New England Cheesemaking Supply³) that keeps the temperature at around 54°, where they stay for a week. The cheeses are turned each day, and by the third day should

be developing some of the buttermilk mold, which is yellowish. While the cheeses are in the enclosed space of the refrigerator they need air exchange, which can be accomplished by opening the door several times a day. Finally the cheeses are moved to a finishing refrigerator (41°), where they are allowed to cool down for a day, then are wrapped in a special cellophane wrap made for mold-ripened cheeses. The wraps are also available from New England Cheesemaking Supply; ask for the wholesale (1000 sheet) price if you plan to make a lot of cheese. The Camembert can be sold after another week at this temperature.

On the second day of the class we learned about making fresh chèvre/fromage. (Goat Lady Dairy's plain fromage won first place in the 1999 ACS competition in that category!) They hang the freshly made cheese in the muslin bags for 24 hours, with room temperatures in the low to mid 70s. The flavored chèvre is mixed in a Hobart mixer (which Ginnie calls a "must-have" piece of equipment) and then packaged in deli-cups or formed into logs, which are air-dried in a walk-in for about a week. Unsold logs are cut and marinated or further dried and used as a grating cheese.

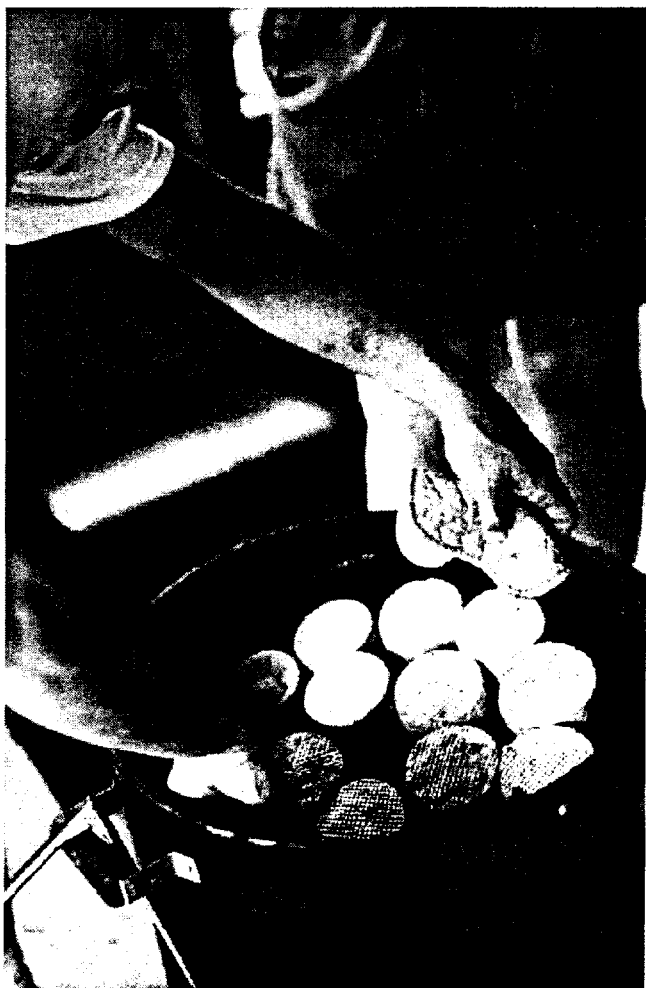


My favorite cheese was GLD's "Smokey Mountain Round," fromage which is molded, then dried as a round and then smoked over fruitwood. This was a 1998 ACS award winner. (This year the wood is plum, but cherry, apple or other fruitwood is fine. Oak or hickory may give too strong a flavor for a delicate cheese.) Small pieces of the wood are soaked in water for at least half an hour, then placed in the pan of an electric smoker (Steve says it's too hard to keep up with a non-electric type smoker) and ignited. A pan of water is placed over

Continued on page 19

Continued from page 18

the wood to assure moist smoke, then net baskets filled with the cheeses are placed carefully down into the smoker. (Spray Pam on the baskets to prevent sticking.) Steve does two baskets at a time for efficiency, although he says one works better. He does rotate the two baskets after about an hour, and the whole process takes about two hours. The cheeses turn a light brown color. "Toasty edges are okay," Steve says, "but be careful that they don't burn."



Sanitation at Goat Lady Dairy

Ginnie explained to us the general sanitation routine used for dairies:

- 1) rinse in lukewarm water (hot water cooks the protein on your pots and molds)
- 2) wash with detergent wash (liquid for CIP, granules for manual wash)
- 3) rinse with tepid water

- 4) acid rinse to remove milkstone
- 5) sanitize with chlorine or iodine solution just before using

They have found at Goat Lady that this procedure doesn't work all that well for them. For cleaning utensils and molds they use a grease-cutting detergent (such as Dawn) with crinoline net for scrubbing. They do acid rinse the pasteurizer two or three times a week, and sanitize table tops. However, Ginnie said the dairy chemicals kill beneficial organisms but not necessarily the bad ones. They once had problems with invasive molds in the walk-in, but finally took the advice someone had given them; they cleaned the cooler thoroughly, then sprayed the walls with the *Penicillium* mold they want to encourage. Since initiating this practice they have had much less problem with unwanted organisms. The cooler is cleaned about quarterly.

Ginnie noted that inspectors count dead bugs and recommended borax in the floor drains for fruit flies. The floor was originally concrete but they had problems with the epoxy paint being eaten off the floor by acidic whey, so they replaced it with tiles; Ginnie said she wished they had started with tile.

Goat Lady Dairy is quite a clean facility. They have received nearly perfect scores on their inspections and have excellent milk quality.

The Business End

Because this workshop was oriented toward cheesemakers interested in going into business for themselves, the Tates gave us lots of good business advice and information. Ginnie said that her goal was to create the class she wished she had had before she started. According to her, the first questions to ask yourself are: *Where are you now?* and *Where do you want to be in five years?* She emphasized the importance of working with officials from the very beginning to avoid mistakes in the building process. They were fortunate, she said. They had been selling cheese illegally and, when they let the inspectors know how serious they were about building a NC licensed cheese dairy, the inspectors allowed them to make cheese in their kitchen on a temporary basis until the building was complete.

Continued on page 20

Ginnie also offered an extremely informative session on her organizational tactics and materials, labeling, pricing, bookkeeping, sourcing and other details, most of which was visual in nature. She said she started with labels from Current, Inc.⁴ and now uses a company called Discount Labels.⁵

The most important resources, she says, are: good water, networks (they've never paid for advertising) and the people who work for them. She estimates that at least \$75,000 is needed to get started in a serious cheesemaking business, although that figure can be modified by "making do" with such things as portable milkers and using your own labor as much as possible. The \$75,000 figure includes land and animals, which are often overlooked as expenses by those who already have them. She recommends the following as good equipment to invest in, which not everyone would think of:

- Hobart mixer (for fromage) – can also be used for butter (20 qt size \$1000-2000)
- A good scale to avoid wasting product and make pricing easier (\$300)
- A good cheese cutter saves time and energy (Nelson-Jameson⁶ has one for \$80)
- Headset for the phone, to allow you to work while talking on the phone.
- Laser printer for labels.
- A timer that you can wear around your neck to remind you to do things.⁷

Ginnie and Steve also gave several marketing tips:

- If a chef (or retailer) is interested in a certain kind of cheese, get the details on exactly what s/he wants.
- Don't forget what you like to make.
- People (e.g., farmers' market customers) prefer to buy several small things as opposed to one large one, which may amount to a greater total ticket.
- Require a minimum sale for deliveries, or add an extra charge to make it worthwhile.
- Add new things to your offerings and stay aware of trends; occasionally browse gourmet and restaurant trade magazines. Keep abreast of what Martha Stewart is doing.

- Do strategic planning during the off-season; drop products you don't enjoy making (unless they are really good sellers).
- Don't overlook caterers as customers.

Business Structure and other details

Goat Lady Dairy is structured as an 'S' corporation, "because that's what the accountant said to do," according to Steve. He said he believed that this structure offered the best mixture of liability protection and tax benefit for them. The farm rents the building and sells milk to the cheesemaking business. The law allows up to 8% of the total assessed value as the amount of rent.

Ginnie emphasized that it is absolutely necessary to carry product liability insurance if you sell cheese. This can be difficult to get and may be expensive. Steve and Ginnie shared with us some operating expenses, in percentages. Labor is included within each category.

	<u>% of income</u>	<u>% of total expenses</u>
Cheese expenses	21%	33%
Goat expenses	23%	35%
Farm expenses	2%	4%
General expenses		
Utilities	4%	6%
Office	3%	4%
Insurance	1%	2%
Marketing	4%	6%
Per Diem ⁸	1%	2%
Repairs & Maintenance	4%	6%
Miscellaneous	1%	2%
Paid to owners	36%	

It took three years for Goat Lady Dairy to break even, five years to make a profit. As mentioned before, Ginnie does have an off-farm income, and the three partners invested their savings and mid-life equity, but borrowed very little. Last year, Steve said, they grossed about \$100,000, with about \$30,000 net to pay the three of them, which doesn't sound like much income. However, when factoring in the reduced cost of living on the farm – not requiring a fancy wardrobe, reduced personal transportation expenses, fresh foods from the garden, etc. – they were happy with this amount.

Family Dynamics

It was clear throughout the two-day workshop that Steve, Ginnie and Lee Tate love and respect each other, but they did let us know that it's not all roses. Each one in turn described some of their bad days, when the just didn't feel like continuing in the business any more. They stressed that it is important to meet with partners frequently to discuss issues that arise. The strategic planning during winter helps them to maintain a clear vision of what is to be done during the year. This is when the big decisions are made so that they don't get made in the heat of a crisis. Ginnie said they must maintain determination and discipline to take time off!

Steve capped off the workshop with a description of what philosopher John Ikerd calls "the three-legged stool of sustainability:"

Nurturing land -- the environmental leg

Creating wealth -- the economic leg

Nurturing your spirit (work must be enjoyable and creative) -- the social, spiritual, emotional leg

Those of us who attended Goat Lady Dairy's workshop wish to again thank Steve, Ginnie and Lee Tate for being so generous with their information and making this workshop a truly valuable experience. ☘

¹ Dairy Connection: www.dairyconnection.com; (800) 810-0127

² also available through Dairy Connection.

³ New England Cheesemaking Supply:
www.cheesemaking.com; (413) 628-3808

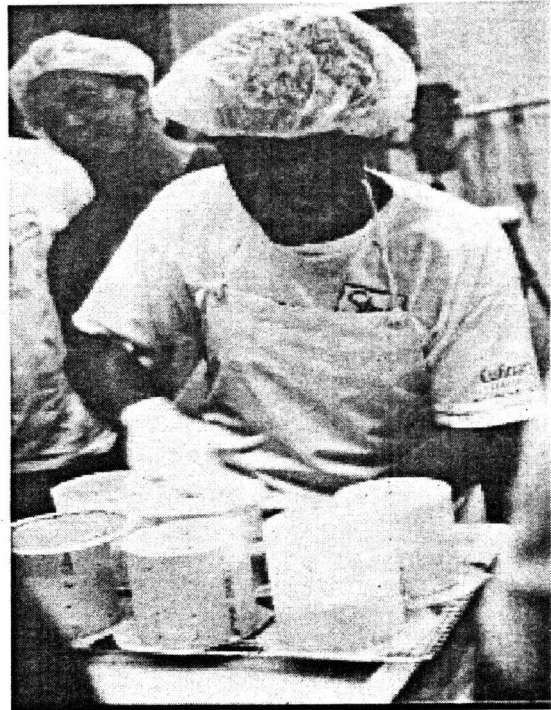
⁴ Current, Inc.: www.currentinc.com; (800) 204-2244

⁵ Discount Labels: (800) 693-1572

⁶ Nelson-Jameson: www.nelsonjameson.com; (800) 826-8302

⁷ The Baker's Catalog has a nice one for \$16.95.
www.kingarthurfLOUR.com; (800) 827-6836

⁸ "running money" needed for gas, food, etc. when leaving the farm



Steve performs his magical Camembert trick.

Tricks and Tips

This space is for good ideas! If you have found a way to save money or time, to recycle materials or reduce consumption, let us know. If your tip is printed, we'll add two extra issues to your subscription.

Flipping cheeses – Steve Tate developed a neat little trick for flipping the soft Camembert. He slips a small (about 6") round pizza screen, found at a restaurant supply store, under the mold, puts another on top, then turns the mold quickly. Usually the cheese will stick to the bottom mat and will not drop down right away. To prevent tearing he quickly rubs the mat with his fingers in a circular motion, freeing the stuck cheese and allowing the entire cheese to drop at once, which usually prevents tears. I found this trick also works quite well with the circular needlepoint canvas that I use for each Camembert mold. ☘

Continued from page 2

itself would be. My wife and I knew we needed to concentrate on marketing and margins. Even with approximately 50,000 people visiting our ice cream stand the first season, and again the second season, we weren't making a profit.

We knew we needed some marketing help, and in the winter of 1999 attended an ice cream retailing course at Penn State. It was very helpful, and because of what we learned there, we were able to make some positive changes for the '99 season. In the fall of '99 we joined the NICYRA organization (National Ice Cream and Yogurt Retailers Association, 1429 King Avenue, Columbus, OH 43212, Tel: 614-486-1444; web site www.nicyra.org). We met so many terrific people who were happy to share information about their ice cream businesses and help us with marketing ideas. As a result, the end of our third season leaves us confident that ice cream can make our farm a profitable one.

We currently use about one milking a week for ice cream and are fortunate to have a dairy nearby who has been willing and able to make our base mix for us with our own milk. We then bring the mix home and make the ice cream right here. One of the biggest changes we made this past season was to sell our ice cream by weight. We now get 34¢ an ounce for cups, cones, and sundaes, which allows us to get paid for all the ice cream we scoop, and the customers to get exactly what they pay for, large or small.

Jim Mitchell
The Creamery at Woodside Farm, Inc., Hockessin, DE

Dear Vicki –

Rob and I learned of your newsletter at a local cheesemaking workshop, where sample issues were made available to attendees. I sent in our subscription and a request for all back issues that same night. They arrived a couple of days ago and Rob is already reading them for the second and third time. Please take this as a compliment, since we're so busy with the farm this time of year that most reading and correspondence gets put off until winter. We made time because we recognized the importance of your work and its significance to dairy farmers like ourselves. Would it be possible to get additional copies of your sample newsletter so we can continue to share it with other small family dairies who do their own processing?

We have a growing network of friends and acquaintances scattered across New York and Pennsylvania who range from small-scale commercial producers and processors, to knowledgeable supporters and practitioners of organic and sustainable agriculture. These include small dairies where families bottle raw or pasteurized milk, or make farmstead products (such as specialty cheeses, yogurt, kefir, cheese fudge, soaps and lotions) using milk from their own sheep, goats or cows. Would you be interested in learning more about what some of these folks are doing?

I've shared in the time-consuming challenge of locating and documenting useful information for small scale dairy producer/processor/marketers, and my limited experience in this area gives me all the more respect for you and the project you've undertaken. If I have information or resources that might be of use to you I'll be happy to share them. I plan to continue writing as time permits. Please let me know if there is anything in particular you might like to hear more about.

Thank you for producing valuable publications like *CreamLine* and *The Small Dairy Resource Book*. We wish you the best in all your endeavors.

Pam Moore

Pam – Thanks so much for your encouragement. When I'm in the thick of this newsletter things get pretty crazy, so I really appreciate such a boost! Yes, yes, and yes! I am happy to send samples of CreamLine to anyone who is willing to distribute them. I'm always on the lookout for stories about what small producers are doing, and resources that will help them/us. – Vicki

Vicki –

We're very disappointed that we won't be able to attend the cheesemaking classes in North Carolina. There are two classes offered here in Iowa in conjunction with the National ADGA (American Dairy Goat Association) convention this coming October. Mary Jane Toth will be teaching these and will hopefully give us a few answers.

Our cheese company is called Northern Prairie Chèvre LLC. We hope to be licensed and beginning production

Continued on page 23

Continued from page 22

by the first of next week (*written 8/29/2000*). We will be making soft herbed chèvres and fresh feta to begin with. Our marketing plans include a large farmers' market in downtown Des Moines, a weekly CSA pickup with 90 families participating each week, and a broker system sponsored by Practical Farmers of Iowa. The PFI system sells to institutions, restaurants, hotels, etc. for a nominal membership fee and 5% commission.

We appreciate having your newsletter available and hope to see it grow for all of our sakes. The biggest problem we small producers face is lack of specific information and helpful networks.

Thanks, Connie Lawrance, Madrid, IA

Congratulations, Connie! I hope things are going well for your new cheese plant. Incidentally, I would love to link to the web pages of any new or existing small dairies and processors. Please see the contact information on page 2. – Vicki

I have Normande cows and I have been making cheese for the last 4 months. I have a 10-gallon vat and make cheese about once a week, the rest of the milk is needed to raise calves. One cow has had over 14% cheese yield. I am using the milk from 2 cows at this time and the yield is 12.5%.

Sincerely, Ken Rabas, Tisch Mills, WI

I'm interested in having people write articles on different species of dairy animals. Normande cattle would be a great breed to write about, as it is one of the two preferred breeds for Brie cheese in France. Or tell me about your favorite goat or sheep breed. Please contact me if you are interested in telling others about your animals. I trade subscriptions for articles. – Vicki ☘

Answer: The chestnut blight fungus, *Cryphonectria parasitica*, secretes rennet as it eats its way into the tissues of the chestnut tree, according to a scientist during an informal discussion at the American Chestnut Foundation conference, October 20, 2000.


CLASSIFIEDS

Buy and sell equipment, books, animals, etc. Up to 25 words, \$5 per issue for subscribers; add \$5 for each 25 words thereafter. Non-subscribers add additional \$5 to total.

Display ads -- a business card size display ad is \$15 per issue, and \$25 to run it for three months in the sample issue, which is distributed widely. For other sizes, contact *CreamLine*. See page 2 for contact information.

Organic Dairy and Milk Processing Apprentice Opportunity : Searching for 2 hard working, honest and enthusiastic apprentices to learn all aspects of organic grass-based dairy-ing and milk processing, from pasture to store shelf. Located in north central Missouri on 550 acres of rolling pasture ground. Milking 50 cows in swing over 10 parabone milking parlor. Currently selling milk and butter in 43 stores in 4 major metropolitan areas. Housing and stipend available but must commit to a one-year apprenticeship. Also have mobile egg enterprise, small flock of hair sheep and working Border Collies. 50 to 60 hours per week with time off to attend conferences and some vacation. Come work and learn with us!

Contact: Kerry or Barb Buchmayer
14649 Hwy M or call 660-244-5858
Purdin, MO 64674



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(541) 444-1362

threering@Newportnet.com

Coming up in CreamLine:

Winter Feature -- The Raw Milk Issue
will feature guest articles by authors
Sally Fallon and Jo Robinson

Book Reviews -- Fundamentals of Cheese Science
The New American Cheese

Spring Issue -- Yogurt and other cultured products

Upcoming Events

November 2-4, 2000
Dairy Sheep Symposium
Guelph, Ontario, Canada
Contact Stephanie Diamant
tel/fax (519) 925-9420
email brebis@hurontario.net

November 16-18
Stockman Grass Farmer's
Grassfed Meats & Milk Conference
Atlanta, GA
Registration \$295 or \$500/couple
call (800) 748-9808
Great-looking program!

CreamLine
P.O. Box 186
Willis, VA 24380

www.metalab.unc.edu/creamery

Address correction requested

Cornish Workshops with Peter Dixon
(cheesemaker and consultant)

For more information contact Janice or Suzanne at (603) 542-8635 (9 am - 5 pm ET). Each class is \$100 and includes great homemade lunches.

Nov 9-10, 2000 Cheeses with eyes from cow's milk

Dec 7-8, 2000 Cheeses of the Mediterranean from cow and goat milk

Feb 8-9, 2001 Cheeses of the British Isles

Mar 8-9, 2001 Introduction to Home Dairying

Apr 12-13, 2001 Soft-ripened cheeses of France from cow and goat milk

May 3-4, 2001 Cheeses from sheep and goat milk

Milk Processing Technology Short Course
November 29-30
Holiday Inn Plaza Park, Visalia, CA

A two-day course which teaches each participant the basic scientific information and practical understanding needed to process milk for cheese and other dairy foods. Sponsored by Cal Poly/UC Davis. \$295.

More information on the web site:

www.calpoly.edu/~dptc/shortcou.htm

Contact Laurie Jacobson at (805) 756-6097
or by e-mail at: ljacobso@calpoly.edu