COMING OF AGE:

THE STATUS OF NORTH BAY ARTISAN CHEESEMAKING

University of California Cooperative Extension

January 2011

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Acknowledgements

We gratefully acknowledge the assistance of the artisan cheesemakers who provided information and review of this survey and to all who participated in the survey. Also, thanks to Dr Bees Butler from University of California Davis for his review of the report and to the California Artisan Cheese Guild for their support and sharing other data and ideas.

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Compliments of Agricultural Institute of Marin. Photo by Curtis Myers.
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Executive Summary

This report provides a current profile of farmstead and artisan cheesemakers in Marin and Sonoma Counties—their farms, ranches, and creameries and their products, markets and plans for the future. The data in this report were collected in interviews conducted in the summer and early fall of 2010 with 38 cheesemakers and cheese professionals. The purposes of the survey were to report on the current status of artisan and farmstead cheese production in the North Bay, to identify the needs and issues facing these farmers and producers, and to present them to the public, other cheesemakers, and local and regional decision makers. The North Bay is home to the largest concentration of artisan cheesemakers in the state. Of California's 43 artisan cheese companies, over half are located in Marin and Sonoma counties. Survey results confirm the many positive aspects of a diverse and thriving artisan and farmstead cheesemaking community—from the growth in and variety of cheeses being made here, to the increasing interest in and demand for artisan cheeses by consumers.

Respondent data indicated:

- Almost half (46%) of Marin and Sonoma counties' artisan cheese businesses are farmstead with one to four family members involved in the operation.
- The oldest continuously operating cheese company has been in business since 1876; the newest began in 2010.
- There are 22 commercial cheese plants in the two counties; four more are close to production.
- Over one-third (33%) of those interviewed have been making cheese for three years or less.
- Almost 8 million pounds of artisan cheese is produced here annually.
- Production per cheese business ranges from 1,500 pounds to 3 million pounds annually.
- At an average of $15 per pound, artisan cheesemaking is a $119 million dollar industry in the two counties.
- Annual sales range from a high of $8 million to a low of $10,000.
- 332 people are employed in the two counties in the production of cheese and fermented milk products.
- 40% had 11 or more full-time employees with an average of 35 employees.
- 70% own a dairy and produce milk for cheese.
- Almost three-quarters (73%) of cheesemakers are making a cow milk artisan cheese.
- 46% of cheesemakers indicated that they farmed all or part of their operation organically.
- 37% rely on land leased from others for their cheese operation.
- 72% percent of farmstead cheesemakers sold agricultural conservation easements on land totaling 9,000 acres and used the proceeds to help capitalize their transition.

Recommendations for future growth included:

- streamlining permits for cheese plant development;
- expanding education and training programs for new cheesemakers;
- increasing the number of cheese operations with active food safety and hygiene plans;
- resolving shipping and distribution problems;
- building an *affinage* infrastructure; and
- promoting area cheeses in connection with culinary and wine tourism efforts.

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Introduction

Inside Tomales' barn-red Town Hall, cheesemaker Sue Conley is pitching more than cheese. She's promoting the North Bay's lush grasslands, likening the sweeping coastal hills to the great dairy provinces of Europe, a Normandy north of the gate, as it was once described. "We should market our region the way they do in France," Conley said at a tasting and presentation for potential cheesemakers. "This is a great milk-producing region and we should play on that"(Digitale 2007).

It seems that's exactly what is happening. As defined by the American Cheese Society (ACS) the word "artisan" or "artisanal" implies that a cheese is produced primarily by hand, in small batches, with particular attention paid to the tradition of the cheesemaker's art, using as little mechanization as possible. Artisan cheeses may be made from all types of milk and may include various flavorings.

While all artisan cheese is made mostly by hand, it isn't always in small amounts. Laura Chenel's Chevre, Point Reyes Farmstead Cheese, and Marin French Cheese make anywhere from 175,000 to over a million pounds of cheese each year in 400-1,500 gallon batches.

Farmstead cheese is artisan cheese, but an artisan cheese is not necessarily a farmstead cheese. In order for a cheese to be classified as "farmstead," the cheese must be made with milk from the farmer's own herd, or flock, on the farm where the animals are raised. Milk used in the production of farmstead cheeses may not be obtained from any outside source. Farmstead cheeses may be made from all types of milk (cow, goat, or sheep). Local examples include Point Reyes Blue, Nicasio Valley Formagella, Estero Gold, and Baserri, an aged Pyrenees style sheep cheese from Barinaga Ranch.

Cheese consumption began increasing in the 1970s when the yearly consumption by Americans was 18 pounds. By early 2000, consumption increased to more than 30 pounds of cheese per capita per year (California Dairy Statistics 2009). It is expected that total cheese consumption in the United States (US) will grow to about 40 pounds per capita by the year 2016. Travel, interest from chefs and restaurants, new media coverage, and growth of farmers markets and specialty food outlets has contributed, but the biggest factor affecting this increase is consumer interest in eating a variety of American made cheeses.

Membership in the ACS has tripled in the past decade, and the number of entries in their annual competition has expanded from less than100 to more than 1,500. The Society is an educational resource for North American cheesemakers and the public. Members also include retailers, importers, chefs, food writers and cheese enthusiasts sharing knowledge and experience on cheesemaking as a hobby or as a commercial enterprise, with special attention given to artisan and farmstead cheeses made from all types of milk. Young, passionate cheese enthusiasts have become cheese entrepreneurs and farmers, creating a renaissance in the cheese marketplace. This growth has also forged new connections with the local farming and ranching communities as demand for cow, sheep, and goat milk for cheese is booming.

Begun in California in 2008, the CACG is an organization designed to support and encourage the California cheesemaking community. Supporting the on-going education of cheesemakers and consumers, sharing resources, and celebrating the art and dedication to quality cheese accomplish this. Membership is open to any individual with an interest in California cheese, including, farmstead, artisan and specialty[1] cheesemakers, small dairy producers, retailers, suppliers, chefs, and cheese enthusiasts.

Lynne Devereux, Executive Director of the California's Artisan Cheese Festival, held each March since 2007 at the Sheraton Sonoma County Hotel in Petaluma, says "we have grown each year featuring 30

[1] Specialty cheese is another term used to classify a general category of cheeses of exceptional quality, limited production, or notable uniqueness. Artisan cheeses fall within this category but not all specialty cheeses are made using artisanal methods.

cheesemakers from California and the Pacific Northwest and hosting educational seminars and a vibrant marketplace for over 2,000 attendees."

Methodology

Survey questions were developed by University of California Cooperative Extension (UCCE) staff with input from local cheese producers. A contact list was compiled from the CACG website; the State of California milk plant listing, and a UCCE agricultural producer mailing list. A total of 26 commercial cheesemakers[2] were interviewed in person and by phone for 60-90 minutes, and represented 93% of the current commercial cheesemakers in the two counties. They were asked about the evolution of their cheese business, including the size and type of operation, number of employees and their benefits, facility development, and future growth.

For the purpose of this survey the term "North Bay" is used occasionally to indicate Marin and Sonoma and does not include Napa. There is one plant, Wallaby Yogurt Company operating in American Canyon in eastern Napa County but it was not included in the survey.

Survey Results

Section 1. Profile of Marin and Sonoma cheesemakers

Why artisan and farmstead cheese?

Passion for cheese, animals, land, and a pastoral lifestyle is a driving force among the majority of the cheesemakers interviewed. "We started because I was in 4-H and fell in love with goats. That love led to the question of what to do with all that milk," says Jennifer Bice, President of Redwood Hill Farm and Creamery. What began as a hobby evolved into a company that today sells cheese and yogurt products throughout the western US while employing 52 staff.

For others it is the perfect transition from multi-generational dairy farming to making a value-added product that supports the viability of their farms while reconnecting with cheese traditions still active in ancestral regions. Don DeBernardi, of Two Rock Valley Goat Cheese says, "I wanted to make Swiss cheese like my relatives made in Switzerland."

Turning the county and region into one of the world's centers for cheese is exactly what Rick Lafranchi has in mind. Six months or so after his family's Nicasio Valley Cheese Company debuted its products to rave reviews, Lafranchi says he's finally ready to place his cheeses before their toughest critics: the residents of the Swiss village of Maggia, which his family left more than a century ago and to which he and his siblings returned to learn the arts of cheesemaking (Rogers 2009).

Those seeking a more rural lifestyle also leapt in. Cindy Callahan, a former nurse, searched for a type of agriculture she could initiate on 34 acres of rolling hills outside Petaluma. A friend's suggestion about dairy sheep launched the journey that became Bellwether Farms twenty years ago. "Who would have ever imagined that I would end up as a sheep farmer; I was 51 years old when I did this."

Some wanted a career change and found their calling in cheesemaking. Seana Doughty of Bleating Heart recalls her early interest, "I was always into food and began cooking at an early age. When I visited my friends' homes some of them were eating blue cheeses from France and sharp cheddars from Wisconsin

[2] Interviews were also conducted with producers of fermented milk products.

while I only knew about Kraft Velveeta in our kitchen!"

A brief history of local cheesemaking

While artisan cheeses have been a part of European culture dating back to the first century, artisan cheesemaking is a new tradition in the US and California that is only 150 years old. In Marin and Sonoma counties, Spanish priests made cheeses from their mission herds while European immigrants working on dairies in both counties brought cheesemaking skills with them from the "old" country. Swiss-Italians, Azoreans, Portuguese, Irish and Mexicans as well as other immigrants, craved their own foods, including traditional cheeses.

The Gold Rush of 1848-1855 created a demand for local products including butter and cheese in nearby San Francisco that only grew over time. The Steele family, who arrived on the Point Reyes peninsula in 1857, built a dairy in what they called "cow heaven" and soon operated three ranches shipping butter and cheese by schooner to the City. In 1859 they produced 55,000 pounds of cheese. By 1870, the Shafters, who were the prominent landholder on the peninsula, ran a "butter rancho" acclaimed as the largest butter dairy estate in the world (Livingston 2009).

From the 1850s on, dairy ranches sprung up not only on the Point Reyes peninsula but everywhere in Marin making the county the top major dairy producer in California for several decades. The 1860 Agricultural Census reports 161,350 pounds of cheese produced in five townships in Marin valued at $39,576 (State Archives). Around 1915, the Western Cheese & Butter Company made cheese and butter with milk from Nicasio dairies until a fire destroyed the warehouse and cheese inside (Livingston 2008). During the depression years the Kraft Cheese Company owned the Nicasio cheese factory until selling it to the Sonoma Mission Creamery who operated additional plants in Sonoma and in Oregon (now the Rogue Creamery) until WWII when they scaled down to one operation in the town of Sonoma[3].

Vella Dry Monterey Jack, the Sonoma artisan cheese that predated the country's artisan cheese movement, had its roots in adversity. In the early 20th century, according to Dry Monterey Jack producer Ig Vella, Italians dominated the wholesale cheese business in the Bay Area. Most of them contracted with North Bay dairies for their fresh Monterey Jack but imported their aged grating cheeses from Italy (Fletcher 2004). When the availability of the imported cheese dried up with the onslaught of WWI, distributors began selling their aged Jack as a replacement. Ig Vella's father Tom, launched the Sonoma Mission Creamery with associate Celso Viviani in a defunct Sonoma brewery in 1931. The partnership dissolved in 1948 to become the Sonoma Cheese Factory and the Vella Cheese Company.

The Marin French Cheese Company has produced an artisan cheese in the same location outside of Novato since 1865, and is the oldest continually operating cheese factory in the US. The Thompson family began making and selling fresh cheese to the saloons where it was served to primarily European dockworkers at Yerba Buena Cove as a substitute for pickled eggs in short supply at the time. The cheese was transported by horse and wagon to the Petaluma River and then taken by the steamer across the bay to San Francisco. Thompson Bros. Cheese Company was able to supply more varieties of cheese to the fledgling San Francisco marketplace as the demand for fresh cheeses quickly grew.

According to the Peluso Teleme website (*www.franklinscheese.com*), Giovanni Peluso emigrated from Crete to Tomales Bay, in Marin County in the early 1900s. Homesick for their native cheeses, Peluso's family members modified a recipe for a Cretan goat milk cheese called Touloumi to accommodate the abundant cow milk available in America and in 1925 began making cheeses similar to those from back home. Though the cheese he developed hardly resembled the sheep and goat milk cheeses of his

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[3] Ig Vella, (personal communication, January 24, 2011).

homeland, Mr Peluso had created a classic. The first manufacturing facility was in Tomales, California. The cheese was sold under the brand name of Tomales Bay Teleme Cheese.

Cooperative creameries operated in Fallon (near Tomales), in Point Reyes and in Petaluma from the 1920s to 1940s. With the advent of WWII and the need to further gear up the country's food supply, small-scale production of unique and diverse cheese virtually disappeared, especially in the West.

In the North Bay, several pioneers led the artisan cheese renaissance in the 1970s and early 1980s by making unique cheeses. These included Laura Chenel (1979), Jennifer Bice and Steven Schack at Redwood Hill Farm (1978), and Patty Karlin and Javier Salmon at Bodega Goat Cheese (1984). Patty Karlin also rents out her creamery to cheese and yogurt makers when they first start out. Says Seana Doughty from Bleating Heart, "Patty is an unsung hero—she has incubated at least four start up cheesemaking operations at Bodega Creamery."

An article in the *Marin Independent Journal* (Rogers 2009) describes how cheese made in Marin (and Sonoma) has its origins in Europe. "Cowgirl Creamery uses Dutch techniques; the new Nicasio Valley Cheese Company draws on the Swiss-Italian heritage of the Lafranchi family; and the Barinaga Ranch specializes in Basque sheep cheeses. However, Marin's conditions and techniques have given those cheeses a distinctly American interpretation. That's particularly true at Point Reyes Station's Cowgirl Creamery, where local air and soil conditions helped create one of the company's best-known cheeses by accident. 'Our Red Hawk cheese initially has a fluffy white mold growing on it,' said, Michael Zilber of Cowgirl Creamery. 'In the process of washing our cheese with brine, we introduced some naturally occurring bacteria that's in the air here, and that bacteria gives the cheese its pungent, stinky quality. We can't produce Red Hawk in our new facility in Petaluma, because it exists in the air in that concentration only in Point Reyes.'"

Section 2. Description of North Bay creameries

Over 22,000 acres in Marin and Sonoma are dedicated to dairy production that includes cheese and fermented milk products. This figure includes both farmstead dairies and creameries and the 22 dairies that sell to Clover Stornetta. Total animals, including dairy cows, goats, and sheep, number approximately 16,623. While the vast majority of milking animals are Holstein cows, 23% are dairy goats, and 4% are dairy sheep. Fig. 1. represents the general location of the dairies and creameries in both counties.

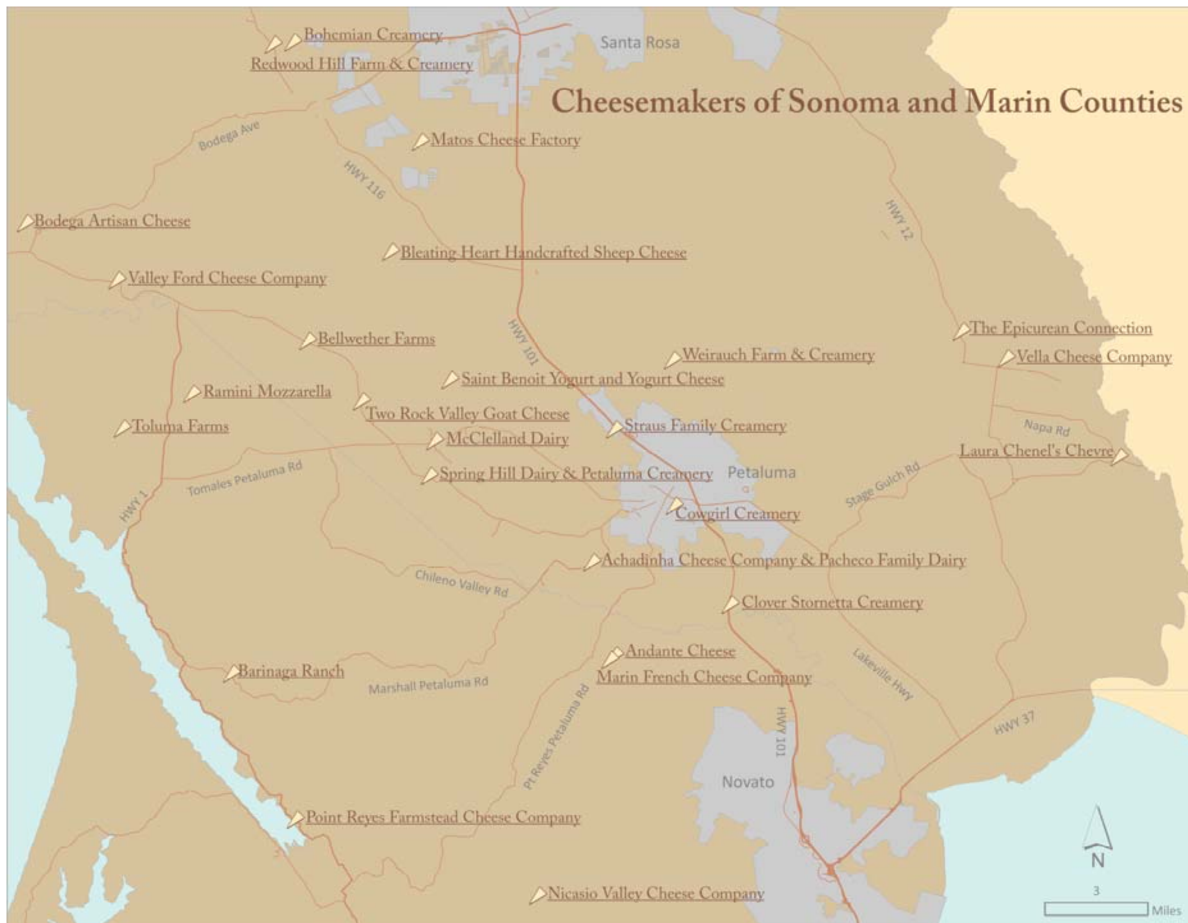

Fig. 1. Map of current cheesemakers in Marin and Sonoma counties

The majority of farmstead creameries[4] are very small making far less than 25,000 pounds each year as illustrated in Table 1. Almost half, or 46%, of the artisan cheese made in the North Bay is farmstead, produced on 10 farms and ranches in both counties; four more will begin making cheese in 2011. These categories are based on industry standards in determining production goals for various size creameries. The term industrial does not always mean that artisan methods are not being employed, but that large batches are produced such that the artisan process can be compromised.

The scope of each creamery varies. Some creameries make cheeses from cow, sheep and goat milk; some have only seasonal production as lactating animals dry up; and others make multiple products such as yogurt, yogurt cheese, butter, and ice cream.

[4] The definition of creamery includes both a plant that collects milk from area farms to make butter, ice cream, and cheese and a farmstead creamery that makes these products from milk produced on-site.

Table 1. North Bay creamery characteristics

Farmstead		Artisan		Industrial	
Small 10-100 gallon batch Under 25,000 lbs /year	5	*Small* 10-100 gallon batch Under 25,000 lbs/year	2	*Small* 1,500-3,000 gallon batch Under 750,000 lbs/year	0
Medium 100-400 gallon batch Under 100,000 lbs/year	4	*Medium* 100-400 gallon batch Under 100,000 lbs/year	2	*Medium* 3,000-5,000 gallon batch Under 1,300,000 lbs/year	1
Large 400-1,500 gallon batch Under 400,000 lbs/year	1	*Large* 400-1,500 gallon batch Under 400,000 lbs/year	5	*Large* Over 5,000 gallon batch Everything else	2
Total	10		9		3

By 2011 the majority of Sonoma and Marin County cheesemakers will be farmstead in nature as they produce and use their own milk and make cheese on the farm. There are definite advantages to having a diversity of size and scope of operations. "Ten years ago", says Liam Callahan, of Bellwether Farms, "there was no one to ask when you had a technical issue come up or you needed more milk. Today, there are more professionals supporting our cheese businesses. It's good for all of us."

State licenses are required to operate a plant and the receiving, processing, or manufacturing of milk products. A total of 118 plants in California were registered to make cheese, yogurt, butter and ice cream in 2009. Sixteen commercial cheese plants were licensed in both counties according to the Milk and Dairy Food Safety branch of the California Department of Food and Agriculture (CDFA) in 2009, and an additional six were licensed in 2010. There are several cheeses made outside the two counties from local milk sources.[5]

It's the milk

The role of local dairies is critical to the success of artisan cheese expansion. High quality milk is the most essential ingredient for cheesemaking. Cheesemakers in both counties use milk from their own animals, which is considered to be of the highest quality, for the production of cow, sheep, goat, or multi-species milk cheeses. Those without dairy animals can purchase milk to make cheese commercially with a California State Milk Handlers license from CDFA.

Milk constituents, including solids, fats and proteins, vary by animal species and breed, adding to the complexity of the cheesemaking process. While Holstein cows bred for milk volume make up the majority of dairy herds in this area, there are also several Jersey dairies. Jersey milk is in high demand

[5] One specialty cheese, sold and marketed locally, is made at a licensed plant in Berkeley. Clover Stornetta Farms' organic and conventional cheese is made outside the county at the Sierra Nevada Cheese Company in Willows, Glenn County.

due to its high butterfat content. Among the four primary dairy goat breeds[6], milk differs with some producing high volumes of milk with low solids, and others producing milk with high protein and butter fat content.

Giraud et al. (2005) estimated that there were approximately 60 commercial dairy goat operations in California in 2005. Today, in the two counties there are seven goat dairies making commercial cheese. Their herds range in size from 18 to 1,600 milking does with a mean herd size of 400. In addition, five creameries purchase goat milk to supplement their own production from at least 16 local and regional goat dairies (four do not own their own dairy herds) that supply creameries but are not in the cheese production business.

Many cheese enthusiasts and cheesemakers marvel over the taste of sheep milk cheese. This appeal has led to a significant but small rise in the number of local sheep dairies. “It was the mid-‘80s when a friend of mine talked about the sheep cheese he ate growing up in Syria and one thing led to another,” mused Cindy Callahan, of Bellwether Farms, the first sheep dairy in Sonoma County and in California until 2004. Today there are at least seven[7] sheep dairies in California, with one located in Marin County and four in Sonoma County. Joe Adiego, of Petaluma’s Haverton Hill sheep dairy, talks about his switch from raising dairy goats to sheep. “I started with 130 milking goats and had a hard time finding buyers, but now that I am starting up a sheep dairy herd I already have a contract for the milk.” Some dairy operators and cheesemakers also prefer the high yields and easier care that are characteristics of dairy sheep.

“Interest in goat and sheep milk production is increasing as the demand for cheese and other dairy products continue to grow,” says Stephanie Larson UCCE Range and Livestock Advisor for Sonoma and Marin counties.

Cows lactate for most of the year as do goats, while sheep lactate for up to eight months a year. Farmstead cheesemakers can supplement their milk supply during the year by purchasing another type of milk in order to maintain production levels. This practice also creates opportunities for some interesting and seasonally available cheeses. Rondo, Melange, and Metronome are three excellent examples of mixed goat and cow milk cheeses made by Soyoung Scanlon at Andante Dairy west of Petaluma in Marin County.

Daphne Zepos, instructor at the San Francisco Cheese School and at the new College of Marin cheesemaking certificate program remarks “Each cheese type —cow, goat, sheep — has a different flavor that is created by a wonderful combination of their breed, the pasture forage they eat, and the care with which they are raised. It’s that *terroir* or microclimate of the milk that a cheesemaker looks for since cheese is such a simple and pure product made with essentially milk, salt, cultures and coagulants. Dairy and flavor scientists estimate that 20-30% of the aromatics come from the animals feed and water. The remaining 70-80% is determined by the cheesemaking and ripening parameters (McCalman 2010).

"You can make bad cheese from good milk, but you will never make great cheese with bad milk. It's just not possible," says Michael Zilber, general manager of Cowgirl Creamery. "We are lucky to have some superb sources of milk. I think the salt air, great grass and conscientious animal husbandry practices going on out here make for good cheese” (Rogers 2009).

[6] Dairy goat breeds include primarily Alpine, Saanen, Nubian, and LaMancha.
[7] Two are currently in the licensing process in Sonoma County and should be licensed by mid-2011.

Diversification strategies continue

The multi-generational family dairies scattered throughout Marin and Sonoma use milk production techniques that emphasize quality over quantity. Clover Stornetta Farms has purchased and made a variety of milk products, including cheese, from area producers for years based on a “quality not quantity” marketing platform.

Diversification of milk products is critical to the viability of the 92 family dairies spread out between Marin and Sonoma counties. Clover Stornetta’s Marcus Benedetti comments, “We are encouraged to see our producers making value-added products that strengthen their future.”

Currently 33 North Bay dairies have transitioned to producing organic milk[8] as a way to earn more money than by selling conventional milk. However, recent milk prices have decreased the price difference between premiums paid for organic and conventional milk. Additionally, a glut of both conventional and organic milk is currently depressing milk prices.

Last year was a very difficult year for California dairies including those in the North Bay where low milk prices coupled with the unusually high cost of production threatened many dairies. These economic conditions resulted in four dairies going out of business. North Bay dairies are typically small multi-generational family operations milking 300 to 400 animals compared with San Joaquin Valley dairies that average 2,000 animals. Table 2 represents the current size and number of cow dairies in both counties (CDFA 2009).

Table 2. North Bay cow dairy characteristics (CDFA 2009)

County	Cows	Dairies	Average number of cows/dairy	Yearly milk production in lbs	Average farm acreage
Marin	9,284	23	404	182,178,692	600
Sonoma	26,538	69	385	520,731,219	420

Cheesemakers and farm officials say specialty cheese is a way to sustain the region's dairies by commanding a premium price for their product (Digitale 2007). "We live in the high-rent district," said Jennifer Bice, owner and president of Redwood Hill Farm and Creamery, "and you can't do commodity crops, commodity wine, commodity cheese."

Bob Giacomini, dairy rancher in Marin said this about his family’s transition to making award-winning cheeses. “My wife and I have always had in the back of our minds that someday, somehow we wanted to not just sell the milk we were getting from our cows but be able to take it to the next level and produce a product ourselves that we could take direct to the consumer. Cheese was a natural. If you think it through and you have the family help that wants to stay in the farm, I think there are going to continue to be opportunities to make a decent living.”

[8] P. Lane and A. Sauber (personal communication, November 15, 2010)

North Bay annual cheese production

The longest continuously operating cheese company in the US, Marin French Cheese has been in business since 1865, while the newest, Nicasio Valley Cheese Company started making cheese in 2010. While the average cheese company has been producing artisan cheeses for 12 years (table 3), there is another wave of small-scale cheese production occurring in both counties.

Table 3. Summary of 2010 North Bay artisan cheese production

	Lbs of cheese	Cheese types/ varieties	Retail price per lb	Years in business	Creamery size in square feet
Total	7,918,570	95	N/A	N/A	22
Average	91,891	4	$15.00	12 years	8400
Range	1,520-3,000,000	1-9	$6.00-$30.00	<1-145	1,400 - 60,000

Over 160 different types[9] of cheese are made from cow milk in California according to the California Milk Advisory Board (CMAB 2009). In the North Bay over 95 types of artisan cheeses are made (table 4). Retail prices for these cheeses range from $6 per pound for fresh Fromage Blanc to $30 per pound or more for aged farmstead cheeses. Sold locally and at retail stores across the state and country for an average of $15 per pound makes artisan cheesemaking a $119 million industry in the two counties.

Cheesemakers either reported their annual production in pounds or in fluid gallons of milk used per week and per year[10]. Annual milk production figures combined cow, goat, and sheep, and included milk sold to creameries for cheese production by several dairies. An additional quantity was used to make other milk products seasonally such as butter and ice cream.

Five local creameries including Redwood Hill Farm and Creamery, Straus Family Creamery, Clover Stornetta Farms, Saint Benoit Yogurt, and Bellwether Farms make other fermented milk products such as kefir, yogurt, and yogurt cheese. In addition, Wallaby Yogurt Company, located in Napa County, purchases 100% of their milk for yogurt production from six family dairies in Sonoma and Marin counties. Approximately 1.8 million gallons of product, sold in various sized units, were manufactured and sold by these four local creameries in 2010.

Sonoma and Marin 2010 cheese production figures	
13,990,270	Total gallons cow, goat, and sheep milk
117,722,568	Total pounds milk used for cheese production
7,918,570	Total pounds cheese produced

[9] According to author Laura Werlin (2007), there are eight basic styles of cheese. *The Guide to West Coast Cheese* by Sasha Davies (2010) and *Mastering Cheese* by Max McCalman (2010) provide further information about cheese types.

[10] 1 gallon milk ≈ 8.6 pounds milk but varies based on type and density of milk.

Table 4. Types of artisan cheeses made in Marin and Sonoma counties

Fresh: These cheeses retain fresh milk flavors, with little or no aging, which is their key characteristic. **EXAMPLES:** Chef's Chevre - Laura Chenel's Chevre Delice de la Vallee - Epicurean Connection Farmers Cheese - Spring Hill Jersey Cheese Foggy Morning - Nicasio Valley Cheese Company	***Semi-hard:*** Cheeses that tend to be firmer, yet still pliable, and usually good melting cheeses. Their flavor characteristics vary, but in general, this category of cheeses tends to have the greatest complexity and balance of earthiness, a little sweetness, a good but not overwhelming amount of salt, and sometimes buttery and nutty flavors. **EXAMPLES:** Baserri - Barinaga Ranch Estero Gold - Valley Ford Cheese Company Fat Bottom Girl – Bleating Heart Cheese St. George - Matos Cheese Factory
Semi-soft: These cheeses have soft, pliable textures and retain their fresh milk flavors. They may also have a bit of pungency or sharpness depending on the cheese and are generally unpressed. **EXAMPLES:** Carmody - Bellwether Farms Italian Table Cheese - Vella Cheese Company	***Surface-ripened***: Although a broad term to represent any cheese that is ripened by surface molds and yeasts, surface-ripened cheeses in this context include those cheeses that have a wrinkly rind, such as many French and American goat cheeses, or whose rinds are thin and barely contain the runny cheese within. **EXAMPLE:** California Crottin - Redwood Hill Farm and Creamery
Sof-ripened: A soft-ripened cheese is one that has a white, so-called bloomy rind on the outside, which occurs because of the unique beneficial mold that is added to the milk or sprayed onto the cheese during ripening. The most well-known cheese in this category is brie. **EXAMPLES:** BoDacious - Bohemian Creamery Pianoforte--Andante Creamery Rouge et Noir Camembert - Marin French Cheese Company	***Aged (Hard):*** Aged cheeses are ones that are hard and are therefore often best when used for grating. Usually, aged cheeses are saltier than their softer counterparts. That said, the longer certain cheeses are aged, the more they develop a sweet or caramel-like note. Another key characteristic of aged cheeses is that they are crumbly. Also, they might be pungent because of an enzyme that is sometimes added during the cheesemaking process or because that enzyme develops naturally over time. **EXAMPLES:** Canaa - Two Rock Goat Cheese Capricious - Achadinha Cheese Company Dry Jack - Vella Cheese Company
Washed-rind: These cheeses are stinky. It is that characteristic that is so beloved by aficionados and reviled by others. The particular way washed rind cheeses are made and aged lends them their characteristic creaminess (usually), tacky surface, and pinkish or orange-colored rind. **EXAMPLES:** Nicasio Square - Nicasio Valley CheeseCompany Red Hawk - Cowgirl Creamery	***Blue:*** Blue cheeses range from soft and creamy to hard and crumbly and are defined by a mold that is added during the cheesemaking process where the piercing of the cheese introduces oxygen to the interior to facilitate mold growth; they can be made from cows', sheep, or goats' milk, and can have all kinds of different veining. **EXAMPLE:** Point Reyes Blue - Point Reyes Farmstead Cheese Company

Adapted from Laura Werlin's Cheese Essentials by Laura Werlin (2007)

How do we compare with California production figures?

Today, California leads the nation in milk production, producing 21% of the national milk supply according to the CMAB (2009) and is poised in the next few years to overtake Wisconsin as the nation's top cheese state. According to the CDFA 2009 Dairy Statistics Report, 40% of California's milk production went to cheese manufacturing. Mozzarella, Cheddar, and Jack cheeses accounted for 85% of this. Artisan and specialty cheeses make up about 11 % of the state's 2.2 billion pounds produced last year.

The North Bay's farmstead and artisan cheese production is approximately 3% of the total specialty cheese production for the state, at almost 8 million pounds in 2010. It represents a niche market similar to premium wines from small family wineries that in their early days differentiated themselves from large bulk wine producers.

National growth

While still in its infancy, artisan cheesemaking in the US is growing rapidly. Less than 30 years ago all goat cheeses were imported from Europe. Laura Chenel and Mary Keehn, founder of Cypress Grove Chevre, developed world-class cheeses starting as kitchen hobbyists and goat breeders, and became renowned cheese entrepreneurs almost by accident. The sale of both Laura Chenel in 2006 to Rians Group, a French family-owned artisan cheese company, and Cypress Grove Chevre in 2010, to Emmi, a Swiss-based cheese company, shows how far this new industry has come.

Jeff Roberts, co-founder of the Vermont Institute for Artisan Cheese and author of *The Atlas of American Artisan Cheese* (2007) at the University of Vermont, notes that over 450 artisan cheesemakers are located in 43 states with numbers increasing each year. According to Roberts, California is home to the most artisan cheesemakers; Vermont has the most per capita, while Wisconsin weighs in third.

According to Vermont Cheese Council there are 42 artisan cheesemakers in Vermont (2010). The Wisconsin milk marketing board reports 70 though specialty, farmstead and artisan cheese are grouped together in the 2009 guide making it difficult to tease out the farmstead and artisan from commodity cheesemakers. In Pennsylvania, there are 17 cheesemakers listed in the state farmstead and artisan cheese alliance guide, available online at *www.pa.org*. Out west, the directory of the Washington State Cheesemakers Association reports 32 cheese companies; 25 of which make farmstead cheeses. In Oregon, the number of small-scale specialty cheese makers has grown statewide from two to 20 over the last few years (Robertson 2009). In California there are 43 artisan or specialty cheese companies (Davies 2010); 31 are listed as members of the CACG.

Section 3. Developing an artisan cheese business

How did the production of farmstead and artisan cheese develop and grow? In this section, cheesemakers describe the various business strategies and critical elements needed to build and expand their businesses.

Business plans

Almost three quarters (74%) of the cheesemakers interviewed (n=26) had a business plan for their cheese operation, and in the case of farmstead cheesemakers, they also had a business plan for the entire farm or ranch. Approximately one-third of those who had developed business plans for the cheese operation had sought financing for cheese plant development and/or expansion. Capitol sources came from standard bank loans, US Department of Agriculture (USDA) grants and loans, a Whole Foods revolving loan program, and proceeds from the sale of agricultural conservation easements to the Marin Agricultural Land Trust (MALT) or the Sonoma County Agricultural Preservation and Open Space District (SCAPOSD). "Everyone needs a business plan," says Sue Conley, co-owner of Cowgirl Creamery and Tomales Bay Foods. Even the small-scale start-ups that were self-funding their cheese plant development with an inheritance or credit cards spoke about the importance of writing a plan. In some cases the role of MALT and SCAPOSD was crucial to the diversification effort. Almost three-quarters (72%) of the *farmstead* cheese start-ups sold agricultural conservation easements on approximately 9,000 acres in the two counties and used some of the funds to help capitalize their transition.

Corporate structure

While there are at least three creameries that are structured as sole proprietorships or general partnerships, the majority are set up as S-Corporations, C-Corporations, or Limited Liability Companies. Some have changed their structure in the recent past as they prepared for growth or sought private and/or family shareholders and investors. In a few cases the creamery and the dairy may be structured as separate corporate entities for tax, family, and investment purposes.

Leasing land and facilities

Leasing land for grazing animals is common practice in the local milk shed (Rilla and Bush 2003). At least 37% of those surveyed rely on leased land for grazing, and for locating their cheese plant, dairy or some combination. In some cases the entire dairy and creamery infrastructure is leased from a local rancher who may or may not be involved in cheese production.

Construction and permitting

Both counties are fertile fields for cheesemakers with cool coastal weather and productive grasslands. The proximity to affluent and educated consumers makes for a perfect marketplace. Marin cheesemakers talked about the help they received from the Marin County Agricultural Ombudsman, Lisa Bush. Cites Marcia Barinaga, "Lisa was invaluable to me as she helped me steer through a very confusing permitting process." *Establishing a Cheesemaking facility in Marin County* (Bush et. al 2007) is available online and can help any new cheese venture with land use, building, waste disposal, water source, health inspections, and onsite retail sale regulations. Marcia also noted the importance of "spending time on your business plan looking at your numbers. It's really important to be realistic at this stage before you begin to build."

Cheese plant construction ranged from creative use of shipping containers (n=4), to reuse of portable buildings, to dairy barn additions and remodels. Almost half of those interviewed (13 cases) had recently completed new building or expansion projects, and four leased cheesemaking facilities and had

business partnerships with dairies.

An oft-repeated comment was praise for the local CDFA dairy inspectors who are responsible for inspection and licensing of cheesemaking facilities. Many spoke highly of the inspectors such as John Macy, but especially of Les Wood, who recently retired. One cheesemaker says, "Les was so helpful and willing to advise us about cheese plant design and helped us problem-solve when we hit roadblocks."

Another CDFA inspector, Nancy Ahern comments, "Those building an on-farm cheese making facility must follow California Food and Agricultural Code construction guidelines. Working with architects, builders, welders, and suppliers familiar with the dairy industry is a good idea." When asked about what advice she has for new cheesemakers she stressed, "good plant sanitation is essential. Cheese plants have wet environments that require a lot of effort to keep clean and well maintained. Beginning cheesemakers can learn the technical aspect of cheesemaking by taking a course at a college or university."

Cost related to initial cheese plant construction ranged from $30,000 to $3 million. At the upper end construction involved building or remodeling a 30,000-square-foot facility to provide a milk-receiving bay, raw milk tank room, yogurt production, cheese production, warehouse dry goods storage, refrigerated warehouse storage, and offices.

Sourcing milk

In farmstead cheesemaking, the milk for cheesemaking and the cheese production are co-located on the farm or ranch property. In most cases the dairy and the creamery are also on the same property. In others it is a short drive or walk away. Most artisan cheesemakers start small, but some outgrow their own milk supply and need to purchase milk from other dairies. Some cheesemakers purchase milk to cover seasonal declines when their animals aren't lactating.

As shown in Fig, 2, 54% of Sonoma and Marin county artisan cheesemakers supply their own milk, 23% supply but supplement their own by buying from other local dairies, and 23% do not operate a dairy and purchase all of their milk for cheese production from local or regional dairies.

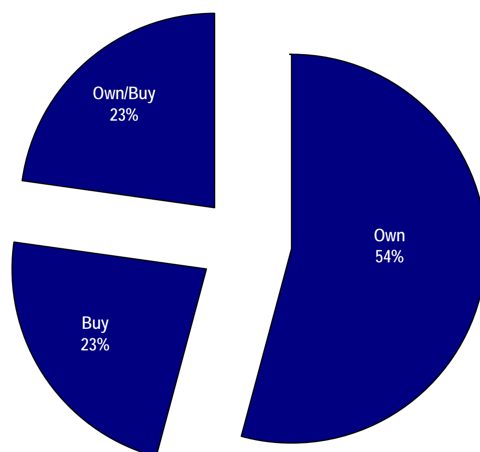

Fig. 2. Milk sources for North Bay creameries (n=25)

Section 4. Annual sales and profitability

Annual sales reported by cheesemakers range from a high of $8 million to $10,000. For a few, this is clearly a hobby business supported by another profit center, such as the dairy, an off-farm job, or a related food business. However a majority see this as a profitable business that supports their families and 10-75 employees. Those in business for 10 or more years described their business as being "profitable" to "very profitable."

Lynn Giacomini Stray talks about her family's experience. "When my dad, Bob, talked about his vision, cheese was a natural. We love cheese and we have milk. And so that was something of interest to my sisters and I. It was an opportunity for us to get back into the family business. That's why we came back to the farm and got involved and also we wanted to make sure that the farm stayed in the family and that it wasn't developed or sold."

Lynn is encouraging, "You've got to reinvent yourself. You're not stuck and there's a lot you can do with milk."

For five years fluid milk paid for the cheese venture at Point Reyes Farmstead Cheese Company. It's now profitable enough to bring all four of Bob and Dean Giacomini's children back to the farm as principals, and to pay for a master cheesemaker and a herdsman.

Being passionate about cheesemaking was a common thread among all those interviewed. There are venerable and multi-generational artisan cheese producers like Chickie Vella and her cheesemaker son Gabriel, whose grandfather Ig Vella, is the pioneer of artisan cheese in California. Chickie knows that "you need to be in the business because you are passionate about cheese and are willing to work long hard hours."

Creating jobs and growth

There are 303 people employed full-time and 29 part-time in the two counties in the production of cheese and fermented milk products. This figure does not include other professionals in the industry such as inspectors, nutritionists, milkers, veterinarians, chemists, culture company representatives, drivers and others.

During the summer interviews 17 or 63% of those interviewed were in some stage of building or expanding their cheese plants and creameries. Eight different local electrical, plumbing and dairy construction contractors and companies were hired to complete these development projects.

Artisan cheesemakers and cheese plant managers reported their employee numbers based on full or part-time employment. The vast majority (91%) of the artisan cheese operations had employees who worked full-time primarily or exclusively for the cheese operation (table 5); a similar proportion had employees who worked between 21 and 39 hours a week. Overall, the operations surveyed averaged 12 employees (both full- and part-time) hired to work mainly or only for commercial cheesemaking activities.

Wages for hourly employees ranged from a low of $9.75 as an entry-level plant worker (average of $11.25 per hour) to a high of $80,000 per year for a head cheesemaker with an average of $50.00 per hour. One facility, with more than 40 employees, paid entry level plant employees $13.55 per hour, the Sonoma County living wage, and provided Kaiser health benefits to all employees. Employees could make $18.00 to $20.00 per hour in three to four years if they remained employed. In the larger companies with 40 or more employees, the head cheesemaker's salary can range from $50,000 to

$80,000, not including benefits. In smaller companies the range is from $15.00 to $25.00 per hour for cheesemakers and assistants,

Table 5. Wages, health and retirement benefits by number of employees

Compensation Characteristics	Number of Full-time Employees		
	Less than 10	10 to 39	40 or more
Number of facilities[11]	7	5	4
Average entry level hourly wage	$9.75	$9.75	$13.55
Average highest hourly wage[12]	$12.50	$22.20	$30
Health benefits	40%	100%	100%
401K	No	Yes - 40%	Yes - 75%
Head cheesemaker salary[13]	$35,000	$40,000-50,000	$50,000-$80,000

Because of strict health codes and sanitary standards coupled with regular health inspections, creameries are clean, well-ventilated workplaces, typically equipped with modern, well-maintained equipment. Dairy product manufacturing workers handle a wide variety of machines that process milk, manufacture dairy products, and prepare the products for shipping.

Duties can range from pumping milk from vats into processing equipment, pasteurizing milk, adding coagulants and other ingredients to make cheeses; testing, sterilizing, heating and agitating curd; draining whey; cutting, packing, and pressing curd; storing, sampling and grading cheese; and packaging for shipping. Milk product technicians are licensed by the CDFA. Artisan cheese companies also employ route drivers, plant engineers, lab technicians and staff in marketing, promotion, sales, management, as well as executive levels in business and finance.

Other noteworthy statistics reveal:

- One to four family members are involved in the farmstead cheese operation;
- Nine or 56% of plants with employees had 10 or more full-time employees;
- 100% of cheese plants with 10 or more employees offer health benefits, while at least 40% included a 401K plan.

[11] Six facilities had not yet hired employees.
[12] No detailed comparison was made between or among employee classifications. Owners only indicated current entry level and highest hourly wage range exempting master cheesemakers.
[13] Salaries for the less than 10 and the 40 or more categories do not include benefits or bonuses, while the salary range for the 10 to 39 category does.

The economic benefits derived from the local artisan cheese industry are apparent. Most operations hire full-time employees (83%), and their productivity is adding additional economic activity to rural communities. The average annual wage estimate of $35,280[14] paid to cheese plant employees is likely spent within the community and sustains other local businesses. This wage is consistent with data from the food processing industry, where supervisors and managers of production workers earned a yearly mean salary of $40,997 in 2004, according to the US Department of Labor (2004). Workers in dairy product manufacturing earned an average of $34,528 in 2004. Full-time workers usually receive a full benefits package. In Marin and Sonoma counties the cost of employee benefits ranged from 20% to 40% at unionized facilities.

Though training and advancement in dairy products manufacturing was discussed in detail, most cheesemakers or plant managers reported the need for more trained employees from entry-level plant workers to head cheesemakers.

Section 5. Marketing and distribution

In a recent issue of Culture Magazine (2010), founder Kate Arding talks about the artisan cheese market. “The goal of a large-scale cheese factory is to produce consistent cheese, as quickly, safely, and inexpensively as possible. It's a highly competitive market where financial success is determined by efficiency, stable shelf life, easy distribution, and economies of scale. Flavor, while certainly a consideration, is not the only priority.

By contrast, success for the American artisan cheese producer is determined almost entirely by their ability to make a cheese that is uniquely delicious and premium, and therefore differentiates itself from others within the marketplace. Creating a cheese that possesses complex, unique, and memorable flavors—often representative of a geographical locale—is the main goal. Achieving these qualities often means getting back to the basics of cheesemaking, which realistically translates into removing much of the mechanization process and investing heavily in milk quality, skilled labor, and other production costs.”

Kate goes on to talk about price increases, but ends with an upbeat prognosis, “Despite all the obstacles, guess which is the fastest growing sector of the cheese market? Yes. Artisan and farmstead.”

All cheesemakers sell in the Bay Area retail market and all of the largest cheese producers also sell regionally and nationally. Additionally, two were selling in Asian markets. Most local cheesemakers found distribution and sales to be challenging. "You have to figure out which distributors a store buys from, get a distributor to carry the cheese, get the store's senior management to approve the cheese, and get each store’s buyers interested in the cheese" says Donna Pacheco producers of Capricious, an aged farmstead cheese made west of Petaluma.

A Vermont farmstead cheese marketing study (Sakovitz-Dale 2006) found similar issues in a survey conducted of 23 farmstead cheesemakers in the state. Most of them (65%) were making less than 10,000 pounds of cheese each year as compared with cheesemakers in the North Bay area, where 70% of the cheesemakers make well over 10,000 pounds per year.

All of those interviewed used a variety of sales outlets to get their cheeses to market and all wanted to capture as much of the retail price as they could. The smaller cheesemakers (making less than 10,000 pounds yearly) depend on farmers markets, and wholesale distributors, including Cowgirl Creamery,

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[14] Average based on low and high hourly wage ranges reported during interviews and excluding benefits.

Oliver's Market, the Pasta Shop in Oakland, the Cheese Board in Berkeley, Cheese Plus in San Francisco, and Whole Foods Market to market and sell their cheeses.

Benoît de Korsak compared the Bay Area and French retail models when starting his Saint Benoît yogurt and cheese business in California: "There is so much opportunity here in California versus France where most yogurt or cheese is handled through huge companies and chain stores like Carrefour, a French company similar to Wal-Mart. Here, we have Whole Foods and it is an incredible model for the small producer where the supply chain is based on quality, price, and regional recognition. They have really supported my products and showcase the local producers and educate consumers."

In addition to wide use of wholesale distribution, some (30%) had their own retail outlets where they sold their cheeses, while another six were planning to add a retail outlet or agritourism component due to their location on a tourism byway and desire to connect directly to the visitor for education and sales.

Lynn Giacomini Stray says "cheese products and associated culinary experiences generate greater profits than the production and sale of fluid milk." Adding value by inviting visitors to the farm to experience cheesemaking first hand is also know as agritourism. A statewide survey of agritourism operators (n=332) conducted in 2009 revealed that agritourism is a vital strategy for diversifying and boosting profit for a small but significant number of California farms (Rilla et. al 2011).

A recent visitor to *The Fork,* a farm to table culinary series at Giacomini Ranch comments on the experience there, "as a food-lover the cooking demo and recipe tasting was entertaining and satisfying. As a businessperson the Giacomini's business plan is impressive. It draws people from outside the community who contribute to the local economy" (West Marin Citizen 2010). As noted in Gloy and Stephenson (2006), there is a segment of consumers who are looking for a closer connection to their food. Selling the "farm story" with the product is an important part of marketing the value-added dairy.

Several cheesemakers want to increase cross-docking where their products can be picked up and dropped off on outbound trucks with little or no storage in between. This combining of cheese material from different origins into transport vehicles with the same or similar destinations saves time and the expense of shipping separately. Cross-docking also reduces handling costs, operating costs, and the inventory storage, since products get to the distributor and consequently to the customer faster.

For example, one larger company conveniently located on Highway 101 expressed interest in developing more cross-docking distribution since their trucks were already picking up and dropping off near smaller cheese facilities and they had the warehouse space for short-term storage. At one point CMAB was picking up cross-docking fees for cow milk cheese but is no longer doing this. Typical distributors used by area cheesemakers include Mike Hudson Distributing, Tony's Fine Foods, GreenLeaf, and Tomales Bay Foods.

Successful merchandising using value-added labels is a key factor in the growth of the retail market for specialty cheese. When asked about the types of on-farm practices used and certification displayed on products for the consumer, 46% indicated that they farmed all or part of their operation organically, and at least half had obtained other certifications delineating their production standards to consumers such as seals for kosher, for humane animal treatment, or the Real California Cheese sticker. Marketing feedback from sales representatives indicate that consumers look for these labels when making choices about which product to purchase. Donna Pacheco, artisan cheesemaker at Achindinha Cheese Company said, "Providing farmstead information is fundamental merchandising because many consumers insist on knowing where their food comes from and how it is made."

Corporate values and responsibility when it comes to environmental practices can also be a big selling point. At least eight of the largest cheese facilities including Redwood Hill Farm and Creamery, Clover

Stornetta, Cowgirl Creamery, Laura Chenel's Chevre, Marin French Cheese Company, Straus Family Creamery, Point Reyes Farmstead Cheese Company, and Petaluma Creamery had conserved energy in manufacturing processes with large solar energy installations, on-farm methane digesters, and composting systems for manure and bedding. Concerns about the environment and sustainability are also having an impact on producers as several have increased their recycling efforts and redesigned packaging to lessen the impact on the environment. At Saint Benoît Yogurt, all of their products are packaged in reusable crocks.

At Redwood Hill Farm and Creamery, statements about their values and commitment to sustainability are clearly described on their website in detail, and on their product labels. From the solar powered milking parlor and dairy to composting of manure for use in their orchards, Redwood Hill Farm and Creamery makes it clear what they stand for.

Section 6. Outlook and growth

The grand opening of the new Laura Chenel's Chevre cheese plant, in a business park south of the town of Sonoma, in January 2011, is one positive sign of the future for artisan cheese.

When asked about their growth plans over the next five years, the majority of operators, 81% (n=21) indicated that they expected to expand production and types of cheese made. Meanwhile, 15% (n=4) planned to maintain their current income and production level while only 4% (n=1) expected to go out of business due to retirement. Several owners spoke of the importance of starting from a strong financial position when starting up a farmstead cheese operation. "I personally know of only three in the state who had started and failed while the rest succeeded," says Lynne Devereux, longtime marketing director with the CMAB.

There are a variety of reasons that milk producers might give for wanting to consider value-added dairy processing. However, inadequate income from the dairy farm probably should not be the only reason for starting farmstead cheesemaking. On-farm processing adds layers of complexity to the business and demands time and management skills that may not be in abundance. For current dairy producers considering a transition to value-added activities, it appears that a financially successful farm business is a prerequisite (Nicholson and Stephenson 2006).

The Lafranchi family in 2004 began researching what it would take to realize their father's dream of producing a Swiss-Italian mountain-style cheese. Their slow, careful development including month-long stints making cheese in the Alps with cousins paid off with the launch of Nicasio Valley Cheese Company almost six years later.

The growth in commercial artisan and farmstead cheesemaking in the two North Bay counties of Sonoma and Marin supports local farms and ranches as well as their surrounding communities by generating revenue, conserving working landscapes, and employing trained workers, technicians and professionals. But cultured and fermented dairy product diversification also presents challenges. Zoning, permitting, environmental health regulations and issues related to on-site retail sales were the leading impediments to farmers and ranchers who wanted to expand their operations to include artisan cheese production. Several who were in the process of building or expanding a cheese plant expressed frustration with their county's policies and procedures, as well as the expenses related to permitting a value added enterprise on their farm or ranch.

Section 7. Recommendations for the future

Issues of concern to those interviewed included: food safety, energy costs, permitting, milk prices, sustainability, skilled labor, education and training, and internship opportunities. Based on constraints discussed in the prior section, area cheesemakers and industry professionals made recommendations that would enhance further development.

Resolve shipping and distribution problems

As highlighted at the ACS Annual Meeting in 2003, transportation and distribution of product for small-scale cheese manufacturers is a problem. Some cheesemakers are located close to distributor routes and benefit from a central location (see Fig. 1), but many are in rural areas away from distributors and other refrigerated trucking services. Additionally, if in proximity to services, daily or weekly shipments may not be of adequate size to be cost effective for pick-up. This was discussed by several of the smaller cheesemakers as problematic, though cross-docking was successfully utilized while a CMAB program was in place.

A recently funded grant by USDA Rural Development to the Community Alliance with Family Farmers will focus on the feasibility of an aggregating and marketing hub, working with existing distributors located along the Highway 101 corridor. A stakeholder group met in the late summer of 2010 and agreed that private sector operation makes the most business sense for any hub to be successful. Use of existing multiple dairy product and specialty food warehouses and distribution hubs as well as a non-profit food bank warehouses is more practical than overbuilding a hub infrastructure with public investment that can't be sustained.

Build an *affinage* infrastructure

Several of the largest cheese plants have completed expansion of their aging or *affinage*[15] facilities. The need for more room to house cheeses while they ripen was a commonly held priority. Some commented on the need for more *affinage* training. The feasibility of forming a local cheese aging cooperative was researched in 2004 by former UCCE Dairy Advisor Barbara Reed (Reed et al. 2004). Ms Reed developed business proposal financials that included a budget for returnable shipping containers for moving cheese from the farm to the aging facility as well as cross-docking arrangements provided by the cooperative to facilitate product delivery and reduce producer labor and shipping costs. Shifting these tasks to the aging facility could enable the cheesemakers to concentrate on cheesemaking and share the load consolidation costs with others.

Promote area cheeses with a coordinated marketing campaign

The majority of area cheesemakers have a continuous presence at Bay Area farmers markets. "Our Marin Civic Center market or one of the smaller markets in Novato are great places for a new cheesemaker to start out," says Brigitte Moran, Executive Director of the Agricultural Institute of Marin (AIM), which manages eight area farmers markets. "Five years ago there were one or two cheesemakers selling fresh goats milk cheese. Today we have more than six selling a variety of semi-soft, washed-rind, and aged cheeses, so there is much more choice for the consumer. On the other hand there is more competition so it's harder for any one farmer to make a profit selling at the market." Brigitte adds, "For a mere $40 fee the new cheesemakers get an incredible marketing infrastructure that exists solely to support them." AIM is currently investigating the purchase of a "mobile cheese truck" that could house all the various cheeses weekly with one cheesemonger selling for the various local artisan and farmstead cheesemakers.

[15] *Affinage* is a French word referring to the process of maturing and ripening cheese.

Other cheesemakers commented on the critical role of the CACG in providing a coordinated approach to promotion. Guild cheese events are held throughout the Bay Area, featuring various member cheeses, and the California's Artisan Cheese Festival held in late March is an excellent way for the public to hear about and taste artisan cheeses. Retail outlets selling their own and other area cheeses such as Epicurean Connection and Tomales Bay Foods are another way for smaller cheesemakers to get exposure. A new cheesemaker said, "now that I've made it, who's going to buy it? I need a marketing class about that."

Rick Lafranchi describes the need for local promotion of a whole agricultural community: "We need a united marketing voice for local producers, including artisan cheese, so that our whole area is promoted whether it's with signage like wine appellations or other methods."

An artisan cheese trail brochure is currently under development by a committee of local cheesemakers. Underwritten by local land trusts, and tourism and economic development agencies, it will highlight and educate visitors and residents alike about the bounty of world-class artisan cheeses made in the two counties.

Streamline permitting

After construction costs, obtaining permits is the most time and cost consuming component of establishing an artisan cheesemaking operation. In some cases it took up to two years; the average cost for the permits alone ranged from $10,000 to $30,000.

More than one new cheesemaker mentioned the helpfulness of Marin county planning and environmental health staff. One new cheesemaker said, "The county was wonderful about our project from the very beginning. If line staff didn't know how to direct me, then supervisors like Larry Grace or Curtis Havel did."

For several cheesemakers, their business development plan went out the window once they received bids from dairy construction contractors. "Once I realized that the plan that my architect had drawn was going to cost me almost $500,000 in construction and permit fees, I literally went back to the drawing board and created my own version," said one new operator.

The more complicated the operation, the greater the permitting fees and hurdles faced at the county and state level for the building design, safety considerations, waste disposal, and retail sales.

Many of the permits, needed for establishing a cheese plant, are issued by different departments or divisions of county and state government. The respective County Boards of Supervisors support agricultural preservation and encourage product diversification as a means to increase agricultural viability, as described in the Sonoma County General Plan and the Marin Countywide Plan. However, the myriad steps it takes to successfully maneuver through the permitting process can seem overwhelming.

In Marin, a part-time Agricultural Ombudsman is available to help producers work their way through permitting, but at a recent Agricultural Summit in Marin many producers called for greater streamlining of the permitting process as it is so onerous and expensive.

Develop training and professional development opportunities

Sue Conley and Peggy Smith, owners of Cowgirl Creamery have led the charge, along with the CACG to create a cheesemaking curriculum at the Indian Valley campus of the College of Marin. With the support of outgoing College President Fran White, and Community Education Director, Janice Austin, the CACG

education committee, powered by Cowgirl Creamery's Maureen Cunnie, and Lynn Giacomini Stray, from Point Reyes Farmstead Cheese Company outlined a College of Marin Artisan Cheesemaking Certificate Program modeled after the Vermont Institute for Artisan Cheese. Classes began in the fall 2010 quarter and the response has been overwhelmingly positive. Instructors are being recruited for each class from as far away as Wisconsin and Oregon and faculty from California Polytechnic State University, San Luis Obispo (Cal Poly) and the University of California at Davis (UC Davis) is assisting as well.

Luis Mora, assistant cheesemaker at Point Reyes Farmstead Cheese Company is taking classes for the artisan cheesemaking certificate program at the College of Marin. He says," I need to learn more and hope to one day become a head cheesemaker at a local company. Taking the certificate courses gives me the diversity of information I need." UCCE staff are providing assistance with the development of this program by tracking student progress via evaluations and in-person interviews.

All of the large creameries expressed the need for training in both English and Spanish about hygiene and food safety in manufacturing practices, and as at least 50% of creamery workers are Hispanic and typically English is their second language. The CACG offered this training in Spanish and English to Guild members and their employees in 2009 with faculty from Cal Poly and plans to offer this and other training in 2010. Information about upcoming training can be found on their website.

The University of Wisconsin-Madison offers the only Master Cheesemaker® Program in the nation. It's a three-year course of study directed by the Wisconsin Center of Dairy Research. Wisconsin also has a very progressive Milk Marketing Board and Dairy Innovation Center. Their Dairy Artisan Network has an impressive website for producers, consumers and retailers found at *wisconsindairyartisan.org*.

The Dairy Business Innovation Center (DBIC), is a not-for-profit organization dedicated to growing specialty, farmstead and artisan dairy processing businesses. It offers beginning cheesemakers business planning, product development, facility assessment, packaging and label development, and marketplace placement. Since its launch in 2004, the DBIC and its partners have assisted more than 170 dairy entrepreneurs with a variety of technical services, coordinated more than 110 projects to increase market share for Wisconsin dairy products and successfully assisted with several relocation ventures. This work has resulted in 43 new dairy processing plants opening in Wisconsin, and another 70 expanded operations in the past six years. This is serious support as specialty, artisan and farmstead cheese has grown to comprise nearly 20% of their total milk production.

With the largest artisan cheese support programs in Wisconsin and Vermont, the West Coast has long needed more training and expertise close by. Most cheesemakers interviewed had completed the weeklong course at Cal Poly or taken more classes that focused on the artisan cheesemaking process from Peter Dickson in Vermont or Margaret Morris of Glenngarry in Canada. At UC Davis, a new laboratory is being created as part of the Robert Mondavi Institute for Wine and Food that includes milk-processing facilities for research and training.

Dr Bees Butler of UC Davis said, "California was an early innovator with decades-long support of the CMAB teaching cow dairy operations the possibilities of cheesemaking to add value to their businesses, and underwriting the yearly cheese course taught at Cal Poly. Sadly it has fallen behind in support of and funding for industry programs like Wisconsin's in the past few years."

As the only program of its kind nationally, Wisconsin requires licensing for all commercial cheesemakers, an 18-month training program including a six-month cheesemaking apprenticeship under a licensed cheesemaker, at least one month's experience in the complete process of cheesemaking, and a four-year dairy-related degree program at an accredited college or university.

While not formalized, many of the cheesemakers interviewed described six-month to year-long apprentice stints at artisan cheese operations in California, Vermont, France and Italy where they learned to make cheese commercially after completing one or more cheesemaking courses.

Most employees of dairy product companies learn their skills from company training sessions and on-the-job experience. Licensing is required to guarantee workers' knowledge of health laws, and their skill in handling equipment.

Students interested in becoming cheesemakers may find it necessary to obtain a college degree in a food technology or food science program. Dairy herd supervisors, in addition to a two-year or four-year food technology or food science degree, should try to gain experience working on a dairy farm. Those who seek management positions may need a bachelor's degree in food manufacturing with an emphasis on accounting, management, and other business courses.

"Be open to learning, from other cheesemakers, from inspectors, from your consumer. Expand your palate. European artisan cheese has seven generations of expertise behind it. Here, we are still in the first generation of learning," says Lisa Gottreich at Bohemian Creamery. The majority of artisan cheese companies interviewed expressed the need for more localized education and training opportunities. Suggested topics are listed below:

Workshop topics

- *Sheep dairy workshop* to encourage development
- *Setting up a Hazard Analysis and Critical Control Point* (*HACCP) Plan and Good Manufacturing Practices*
  (Scheduled for winter quarter at College of Marin)
- *From the Feed to the Milk*: what kind of cheese should you be making?
- *Hands on Cheesemaking* training for cheesemongers
- *Basics of Artisan Cheese* for county health inspectors
  (Scheduled for spring 2011)
- *Agritourism for Artisan Cheese*

Apprentice opportunities

- Year long course in cheese plant development at Indian Valley site
- Create a formal apprentice program via the College of Marin or CACG
- Develop a small scale cheese room for rent to start ups
- *Affinage* training

Improve food safety and hygiene practices

Recent recalls of cheeses for health concerns have sent a collective shudder through the artisan cheese world nationwide. Recalls by local, state and federal health inspectors on five raw (unpasteurized) milk cheese products occurred in 2010 in Washington, Missouri, California, Rhode Island, and Pennsylvania (US Food and Drug Administration 2010). A recent article in the New York Times (Neuman 2010) describes the case of one cheesemaker who is fighting the recall as the cheese has not been tested to determine if it can cause illness. Quality control and quality assurance are vital to this industry. The USDA and federal FDA oversee all aspects of food manufacturing. In addition, other food safety programs have been adopted recently as issues of chemical contamination and new food-borne pathogens continue to be public health concerns.

A HACCP plan that focuses on identifying food contamination hazards and preventing them by using science-based checkpoints and safeguards from raw material to finished products is essential to all

cheesemaking operations. At the heart of the recent recalls is concern over the use of raw milk. In the US, laws prevent the production or importing of any cheeses made from raw milk that are not aged for 60 days or more. A small, producer-run organization called the Raw Milk Cheesemakers Association formed recently and is working to support raw milk producers in developing their cheeses and to encourage HACCP plans. While there have not been any local recalls, the CACG is planning to host a seminar for cheesemakers on this topic in early 2011.

Conclusion

Consumers desire more variety and robust flavor in food. Education from retailers, and cheese organizations on the use of unique and local artisan cheeses is fueling the expansion of farmstead and artisan cheesemaking in the North Bay. Consisting primarily of multi-generational family dairies, the transition to artisan cheesemaking allows families to make a living farming and contributes to the pastoral working landscapes that local residents have grown to expect. Land conservation organizations have contributed to this success as three-quarters of the farmstead cheese operations have sold agricultural conservation easements to help capitalize and expand their diversification efforts.

A majority of farmstead cheese operations have at least one to four family members working in the artisan cheese operation. With almost 8 million pounds of artisan cheese produced in Marin and Sonoma annually, artisan cheesemaking is a $119 million industry in the two counties. Twenty-two commercial cheese plants are licensed in the two counties with four more initiating production but not yet making cheese as of the close of 2010. Annual sales range as high as $8 million for one company, and contribute to the economic vitality of the region. Detailed economic data on the synergistic effect artisan cheese has coupled with wine, other local foods, and agritourism is beyond the scope of this survey. However, based on interviews with all but two of the artisan cheese facilities in the two counties, it is certainly significant.

In order for the artisan cheese niche market to grow, farmstead and artisan cheesemakers will need continued support from local, regional, and state government interested in conserving and actively supporting this type of agricultural diversification. Permit streamlining is one area where local governments could assist, while expanding education and training programs is another.

Clearly, the North Bay Area, encompassing both Marin and Sonoma counties, has a solid agricultural land base and committed agricultural operators, whether making cheese or selling milk to others to make artisan cheeses. Supporting farmers' and ranchers' efforts to diversify and to add value to their products and operations, and ensuring that agricultural land is not lost to residential and other non-agricultural uses are essential to the continuation of this area's agricultural tradition and future.

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Appendix A. List of North Bay companies interviewed

Achadinha Cheese Company and Pacheco Family Dairy
Barinaga Ranch
Bellwether Farms
Bleating Heart Handcrafted Sheep Cheese
Bodega Artisan Cheese
Bohemian Creamery
Clover Stornetta Farms
Cowgirl Creamery
Laura Chenel's Chevre
Marin French Cheese Company
McClellands Dairy
Nicasio Valley Cheese Company
Petaluma Creamery
Point Reyes Farmstead Cheese Company
Pugs Leap Farmstead Cheese (at White Whale Farm)
Ramini Mozzarella
Redwood Hill Farm and Creamery
Saint Benoît Yogurt
Two Rock Valley Goat Cheese
Spring Hill Cheese Company
Straus Family Creamery
The Epicurean Connection
Toluma Farms
Valley Ford Cheese Company
Vella Cheese Company
Weirauch Farm & Creamery

Andante Dairy (not interviewed)
Matos Cheese Factory (not interviewed)

Other dairies and affiliated professionals who contributed:

John Volpi, Volpi Dairy
John Taverna, Chileno Valley Jersey Dairy
Joe Adiego, Haverton Hill Sheep Dairy
Vicki Mulas, Mulas Dairy
Nancy Ahern, California Department of Food and Agriculture
Lynne Devereux, Executive Director, California Artisan Cheese Festival
Dr Bees Butler, UC Davis
Dr Phil Tong, Cal-Poly
Brigitte Moran, Agricultural Institute of Marin
Deborah Dickerson, Cowgirl Creamery
Mike Griffin, Clover Stornetta
Daphne Zepos, Essex St. Cheese Co.

Appendix B. List of Abbreviations

ACS	American Cheese Society
AIM	Agricultural Institute of Marin
CACG	California Artisan Cheese Guild
CDFA	California Department of Food and Agriculture
CMAB	California Milk Advisory Board
FDA	US Food and Drug Administration
HACCP	Hazard Analysis and Critical Control Point
MALT	Marin Agricultural Land Trust
SCAPOSD	Sonoma County Agricultural Preservation and Open Space District
USDA	United States Department of Agriculture
UCCE	University of California Cooperative Extension

Appendix C. Interview questions

Name of person being interviewed
Business name
Business owner (if not person being interviewed)

(1) Tell me about your cheese operation and family background.
Company name:
Ownership:
Location: own/lease
Acreage/Herd size:

(2) What's the inspiration for your cheese business?
(3) What types of cheese are you making? Yogurt? Butter?
(4) How much milk are you using for cheese production, weekly, yearly? Batch sizes?
(5) Are you a farmstead operation? A dairy/creamery? A creamery? Or some combination?
(6) How would you define your cheese operation? Artisan, specialty, conventional, etc.
(7) What types of milk are you using? Supply own, purchase, or both?
(8) What labels are you marketing with your cheese? Kosher, organic, etc.
(9) Is there a conservation easement on your property?
(10) Are you certified organic or are you farming organically?
(11) Are any family members involved?
(12) Number of fulltime and part time employees including benefits received.
(13) Are you a member of the California Artisan Cheese Guild?
(14) What other types of diversification efforts have you undertaken besides cheese?
(15) Do you have a business plan? How did you use it?
(16) Describe your marketing plan and product sales and distribution.
(17) How would you describe your profitability on a scale of very profitable to not profitable at all?
(18) What plans do you have to increase your profitability?
(19) Are you planning to grow your cheese business? How? Target markets?
(20) What polices, land use or other have enhanced or hampered your efforts?
(21) What changes would you want to see in county government support and/or regulations that would enhance artisan cheese production in the area?
(22) Are there any lessons that can be used or adapted to other producers?
(23) What advice do you have for the next generation of cheesemakers?
(24) If local training classes were offered, would you attend?
(25) What future goals or plans for growth do you envision?
(26) Any other comments you can think of?

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