U.S. Dairy
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U.S. as a Key Source for Cheese & Butterfat

Most of the attention in U.S. exports goes to dry ingredients, where American suppliers have had great success over the years. But with shifting world market conditions, the United States has become a prime source for cheese and butterfat, as well.

The United States produces about one-quarter of the world's cheese, with 2007 production estimated to reach 4.38 million metric tons (MT). Over the last 10 years, U.S. cheese production has increased 2.8% per year. Over the same period, U.S. butter output has expanded 3.1% annually, and is on track to approach 700,000 MT this year, the highest level since 1943.

According to the most recent statistics available (January to September 2007), the U.S. suppliers exported 70,477 MT of cheese, up 38% from a year ago, and 60,682 MT of butter, up 155%, according to the U.S. Department of Agriculture's Foreign Agricultural Service (USDA/FAS). Manufacturers report continued strong exports in October and November.

Over the years, the United States has built cheese export markets in the retail and foodservice sectors based on value-added formats or positioning. On butterfat, U.S. exports have been miniscule over the last decade, when U.S. prices were routinely higher than world prices. Now, global pricing trends have made U.S. commodities more competitive, presenting broader and deeper opportunities.

In mid-November, spot loads of cheddar cheese from Oceania were trading for about $5,100/MT, FOB, and butter from Oceania was about $4,250, according to USDA. Meanwhile, European butter was trading for close to $5,750. U.S. prices, on the other hand, were about $4,500 for cheddar cheese and $3,025 for butter.

Seizing the opportunity, U.S. butter manufacturers have made the moves necessary to produce to international market specifications. U.S. butter is typically 80% fat and salted, while overseas buyers prefer 82% fat, unsalted. Over the last few months U.S. manufacturers have churned more higher-fat butter for export.

Structural changes in the world dairy market give the United States an opportunity to continue to grow exports. Strong demand is straining the world's available supply of cheese and butterfat, and shifts in supply capabilities from the world's traditional exporters have compounded the shortage.

Butter production in the European Union (EU-27) has steadily declined over the last few years as more milk is channeled into cheese production to satisfy internal demand. According to Eurostat, EU-27 butter production is expected to be 2.0 million MT this year, down 9% from 2003 levels.

The European industry has withdrawn all its intervention butter stocks in the last year. Public stocks dropped to zero on September 13; a year earlier, inventories were sitting at 126,135 MT.

Over the last few months U.S. manufacturers have churned more higher-fat butter for export.

Meanwhile, ongoing drought in Australia has reduced the supply of milk and manufactured products. In the July-September period, Australian butterfat production was down 14% from the prior year, and butterfat exports were down 31%, according to DairyAustralia.

In addition, this fall, the weak U.S. dollar hit a new low against the euro. This has been coming on for a couple years; since July 2005, the value of the dollar has dropped 21% vs. the euro, 15% vs. the New Zealand dollar and 24% against the Australian dollar – improving the competitiveness of U.S. products.

Photo: Wisconsin Milk Marketing Board

Perhaps most importantly, the European Union suspended export subsidies on butter and cheese in June 2007. The move had an immediate effect, causing EU butter and cheese prices to double in a matter of months.

These structural fundamentals – strong demand, constricted production, reduced stocks, the weak dollar and the absence of subsidies – are expected to persist into 2008. That should make the United States one of the best sources for cheese and butter in the year ahead.

USDECNews is published by the U.S. Dairy Export Council (USDEC) and is designed to provide up to date information about the U.S. dairy industry for the benefits of our international partners.

USDEC was formed by Dairy Management Inc. in 1995 to enhance the U.S. dairy industry's ability to serve international markets. USDEC is an independent non-profit membership organization representing dairy processors, exporters, milk producers and industry suppliers.

USDEC supports international buyers of dairy products by providing information about U.S. suppliers, their products and capabilities. We bring buyers and sellers together through conferences, trade missions and trade shows. USDEC furnishes application and usage ideas for U.S. dairy ingredients through seminars, one-on-one consultations and technical publications. We assist with foodservice promotions, menu development and education. We also work with local authorities to resolve market access issues that ensure reliable delivery for customers and importers. When you work with USDEC and its members, you are partnering with companies that manufacture and export more than 85% of all U.S. dairy products.

U.S. Market Situation and Outlook

Milk Production Increase

Milk production in the United States has increased above trend during 2007 and will continue to increase at a greater than average rate during 2008, according to estimates released by the USDA in *Livestock, Dairy, & Poultry Outlook* (October 22, 2007).

For the past couple of decades, production per cow in the United States has increased on average about 2% annually. The number of milk cows in the nation's milking herd has been declining at a relatively slow rate. The net result: annual (on average) increases in milk production of about 1.3%.

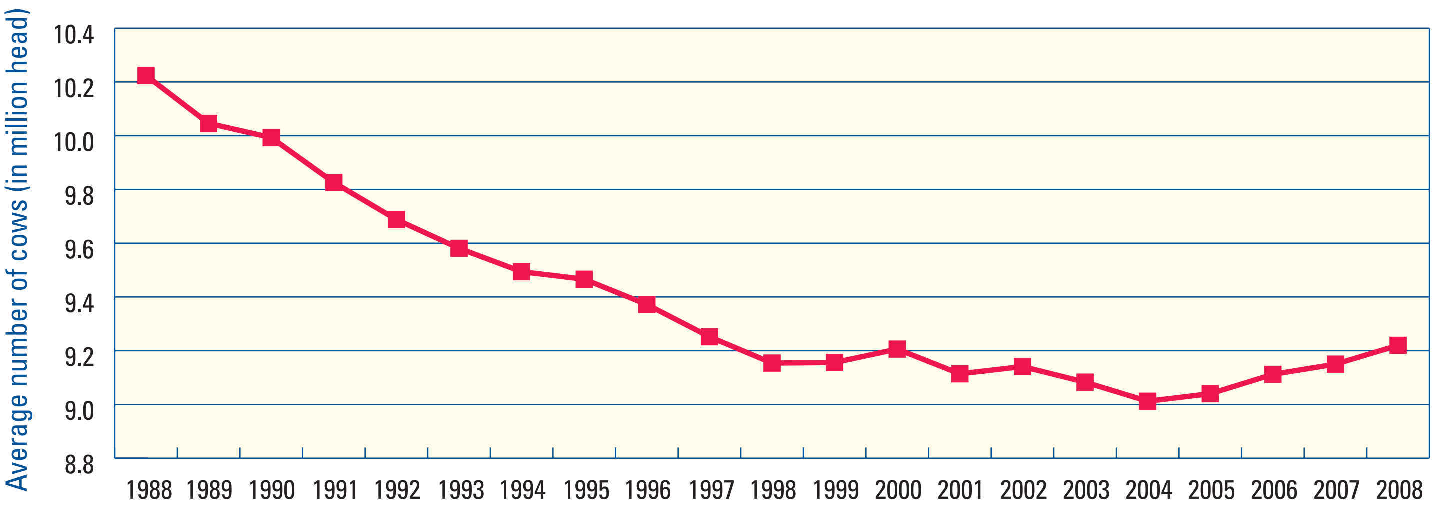
"A higher number of milk cows and slightly higher output per cow will translate into higher milk production for both 2007 and 2008," according to USDA analysts.

In fact, dairy farmers in the United States have been busy for the past several years. During 2005, they boosted milk production to more than 77.9 billion liters (L), 3.8% more than 2004. During 2006, production was increased another 2.7% to 80.1 billion L.

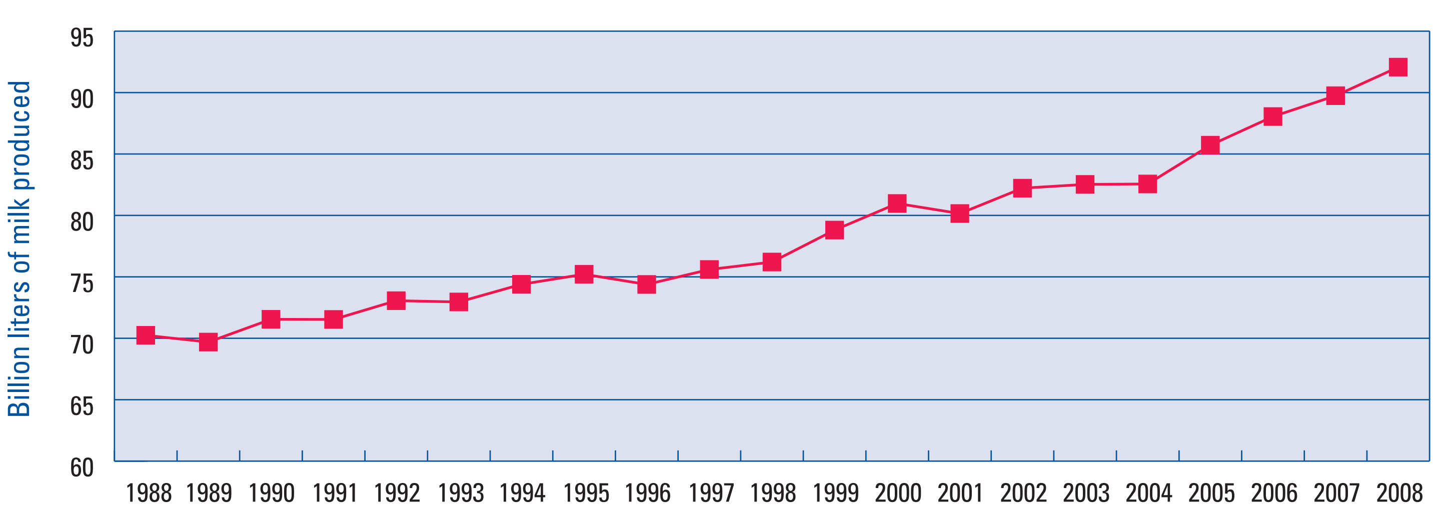
Now, USDA says production during 2007 will total more than 81.7 billion L, an increase of about 2%. This is attributed to a 1.6% increase in production per cow and a substantial increase in the size of the milking herd: 65,000 more cows.

The reversal in cow numbers will continue during 2008 and drive milk production to about 83.8 billion L, an increase of 2.6% versus 2007. USDA analysts expect cow numbers to total 9.23 million by the third quarter of 2008. Cow numbers in the U.S. have not been that high for more than a decade, since September 1997, to be exact. High grain and forage prices will however hold back production per cow and it will only increase about 1.8% during 2008.

U.S. Average Dairy Cows Population from 1988 to Projected 2008



Total Milk Production from 1988 to Projected 2007 and 2008



Processing Capacity Increase

Additional milk requires more plant capacity and U.S. dairy processors and manufacturers are responding. A large cheese plant has just come online and several other cheese, whey and milk facilities will be added over the next couple of years, according to published reports and company announcements. For more details please refer to the "In the News" article in this and previous issues.

Cheese and whey products

- Hilmar Cheese Co.
- Leprino Foods
- Great Lakes Cheese (Sept 2007)
- Green Meadows Dairy LLC
- Davisco Foods

Milk Powders and butter

- High Desert Milk Inc (Sept 2007)
- California Dairies Inc (CDI)
- Idaho Milk Products

Packaging and distribution

- Masters Gallery Foods
- Sartori Foods
- Sargento Foods

By the end of 2008, annual U.S. cheese plant capacity will have increased by more than 180,000 metric tons (MT). Given the steady but modest increases in domestic consumption, much of this additional production could be available for export. This new cheese capacity will also yield a substantially increased output of a variety of whey products such as whey protein concentrate. Most of the production will be a mix of products tailored to export market requirements.

By mid 2008, plants capable of producing 95,000 MT of skim milk powder and nearly 50,000 MT of butter will have been added by U.S. manufacturers. With domestic requirements being met by existing plants, virtually all of this new production could be available for export.

Striving to increase efficiency, plant operators are always looking for ways to move more milk per day through their existing facilities. It's impossible to know just how much capacity will be added during 2008 and into the future, but analysts say the volume could be significant.

Several plants that are being built have not released data about capacity. Additionally, other dairy manufacturing plants are almost certainly being planned in the United States, but for competitive and other reasons, no public announcements have been made yet. Stay tuned for details.

U.S. Production and Export for 2006 and Projections for 2007 and 2008

Product	PRODUCTION				EXPORTS			
	2006 ('000 MT)	2007 Jan-Sep actual ('000 MT)	2007 total estimate ('000 MT)	2008 total estimate ('000 MT)	2006 ('000 MT)	2007 Jan-Sep actual ('000 MT)	2007 total projected ('000 MT)	2008 total projected[a] ('000 MT)
Cheese (not including cottage cheese)	4,325	3,263	4,401	4,505	71	72	92	95
American	1,775	1,314	1,767	1,809	-	-	-	-
Mozzarella	1,426	1,111	1,487	1,522	-	-	-	-
All other (residual)	1,124	838	1,147	1,174	-	-	-	-
Butter/Butteroil	657	512	687	731	10	22	24	26
Ice Cream and mixes	8,403	6,752	8,455	8,658	27	23	26	27
Fluid milk and cream (1,000 liters)	26,045	-	26,564	27,241	24	22	30	31
Milk Powders	733	551	719	736	292	202	242	248
Whey total	749	566	752	770	348	323	425	435
Dry Whey	499	388	511	524	227	204	261	268
Whey protein concentrate and modified whey	194	133	181	185	97	95	129	132
Whey protein isolate	14	12	17	17	12	12	16	17
Lactose	335	258	343	352	238	295	377	386[b]

[a] Based on 2007 export rate

[b] Lactose exports exceed production. Past product misclassification may be reflected in projections.

In the News…

New USDEC Members

- USDEC welcomes six new companies to the membership: **Finlandia Cheese**, a Parsippany, New Jersey-based cheese distributor and marketer; **La Belle Associates**, a manufacturer of bovine colostrum from Bellingham, Washington; **Downes O'Neill LLC**, a financial brokerage firm from Chicago; **NorthWoods Group**, a Minneapolis-based trader; **Alpura International-USA**, a Mexico City-based milk processor; and **Elanco Animal Health**, a supplier of animal health products from Greenfield, Indiana.

New Plants and Upgrades

- **Davisco Foods**, Jerome, Idaho added a large capacity dryer (75,000 MT of finished product annually) to handle liquid whey, whey permeate and milk permeate in October 2007.
- **Hilmar Cheese Co.** started production at its new state-of-the-art plant in Dalhart, Texas. Once it is fully operational, it will convert up to 2.2 million liters of milk per day into several different cheese varieties and whey protein products. Currently, it is handling about 880 thousand L of milk a day.
- **Idaho Milk Producers** will build a $70-million processing plant in Jerome, Idaho. The first phase of the plant is scheduled to open next winter, producing whey proteins, lactose, concentrated milk and cream.
- **Green Meadows Dairy** will open a cheese and whey plant in Hull, Iowa, in late 2008. The plant will handle 300 million L of milk per year.
- **California Dairies Inc (CDI)** will be opening a new plant in Visalia, California early in 2008. This facility will be capable of converting more than 2.2 million L of milk per day into various milk powders and butter including some specialty milk powders. At capacity, Phase I of this project will be able to produce more than 63,500 MT of nonfat dry milk annually and more than 34,000 MT of butter. Phase II of the CDI project, which should be complete late in 2009, will expand the plant to handle an additional 2.4 million L of milk per day.
- Italian cheese manufacturer **Sartori Foods** will build a $15-million packaging and converting facility in Plymouth, Wisconsin. The 9,300-sq-m plant should be complete by December 2008.
- **Masters Gallery** will build a 6,500-sq-m addition to their Plymouth, Wisconsin, cheese cut-and-wrap facility. The $8-million project is expected to be complete by late 2008, nearly doubling the size of the plant.
- **Sargento Foods** will expand its Kiel, Wisconsin, plant for snacks, portion-controlled shredded natural cheese and frozen appetizers, to handle increased demand. The $6-8 million project, which will add 5,575-sq-m to the facility, should be complete by next summer.
- **Williams Cheese**, Linwood, Michigan, is doubling the size of its facility with a $1-million expansion. The company sells 2,250 MT of cheese annually.
- **Perry's Ice Cream** will spend $5 million to expand its cold storage and manufacturing facility in Akron, Ohio. The 1,625-sq-m project should be complete by March.
- **Pacific Cheese Co.'s** new processing plant in Amarillo, Texas, will be bigger than initially thought. In May Pacific announced a $10-million, 3,716-sq-m project. In August it amended the plan to build a $15-million, 8,100-sq-m facility. The plant will be complete in 2008 or 2009.
- **Leprino Foods** is expanding its Lemoore West, California, cheese and whey plant. Plant capacity ultimately would increase from 2.6 million L of milk daily to 4.4 million L. The first phase of the expansion is expected to be complete by spring 2009.

Moves and Consolidations

- **Dairy Farmers of America** will close its Corona, California, cheddar block cheese and whey plant by December 31. The plant, which had been handling 2.2 million L of milk per day, has been operating at reduced capacity since August 31. In addition, DFA sold its bulk shredded American cheese business to **Schreiber Foods**, Green Bay, Wisconsin.
- **Unilever** will close its Green Bay, Wisconsin, and Oakville, Ontario, offices and consolidate North American ice cream operations into their U.S. headquarters in Englewood, New Jersey, and Canadian headquarters in Toronto, Canada. Operations at the ice cream manufacturing plants are not affected, and Ben & Jerry's will continue to run out of Vermont.

- **Zivney Cheese**, Minonk, Illinois, closed its doors and put the business up for sale. The family had been producing cheese in Minonk for three generations.

Acquisitions and Mergers

- **Foster Farms**, Modesto, California, acquired the **Crystal Cream & Butter** business from HP Hood, just five months after Hood bought it. Hood will retain the Sacramento, California, plant and retrofit it for production of branded extended shelf life milk products including *Lactaid* and *Stonyfield* organic milk, giving the company its first production center on the West Coast. The deal expands Foster's milk volume handled by 20%, to about 11.4 million L per week.
- **Freeze Operations Holding Corp.**, a unit of investment firm **Sun Capital Partners Inc.**, acquired **Friendly Ice Cream** for $337 million. In addition to its ice cream manufacturing operations, Friendly has 515 company and franchised restaurants throughout the Northeast.
- **Fairmount Food Group** added to its portfolio of specialty cheese importers with the acquisition of **Advantage International Foods Corp.** This marks the fifth cheese acquisition for Fairmount since its founding in 2003. Previous acquisitions include Swissrose International, DCI Cheese, and Green Bay Cheese.
- **Palladium Equity Partners**, a New York-based private equity firm that focuses on acquiring Hispanic businesses, bought **Castro Cheese**. The Houston, Texas-based Castro makes the La Vaquita line of cheese and dairy products.
- **American Home Food Products** acquired **Artisanal Cheese**, New York. Artisanal has distribution in the high-end hotel and restaurant sector. AHFB plans to make Artisanal a national, full-line specialty cheese brand.
- **Sigma Alimentos**, the processed meat subsidiary of Mexican company Alfa, acquired **Mexican Cheese Producers** of Darlington, Wisconsin. MCP has a production capacity of 10,000 MT of Hispanic cheese per year.

New Products

- **Sorrento Cheese**, Buffalo, New York, introduced two varieties of *Sorrento +Plus String Cheese*. One is fortified with calcium and vitamin D; the other is 100% lactose-free. The new line addresses consumer demand for functional foods.
- **Kroger Co.** introduced *Kroger's Active Lifestyle* brand milk, billed as the first national launch of a cholesterol-cutting milk. The milk uses CoroWise plant sterols, from Cargill Inc., which have been shown to reduce cholesterol.
- **DCI Cheese Co.** offers *County Line* probiotic cheese. Cheddar, monterey jack, colby jack and pepper jack contain active *Lactobacillus* bacteria to promote digestive health.

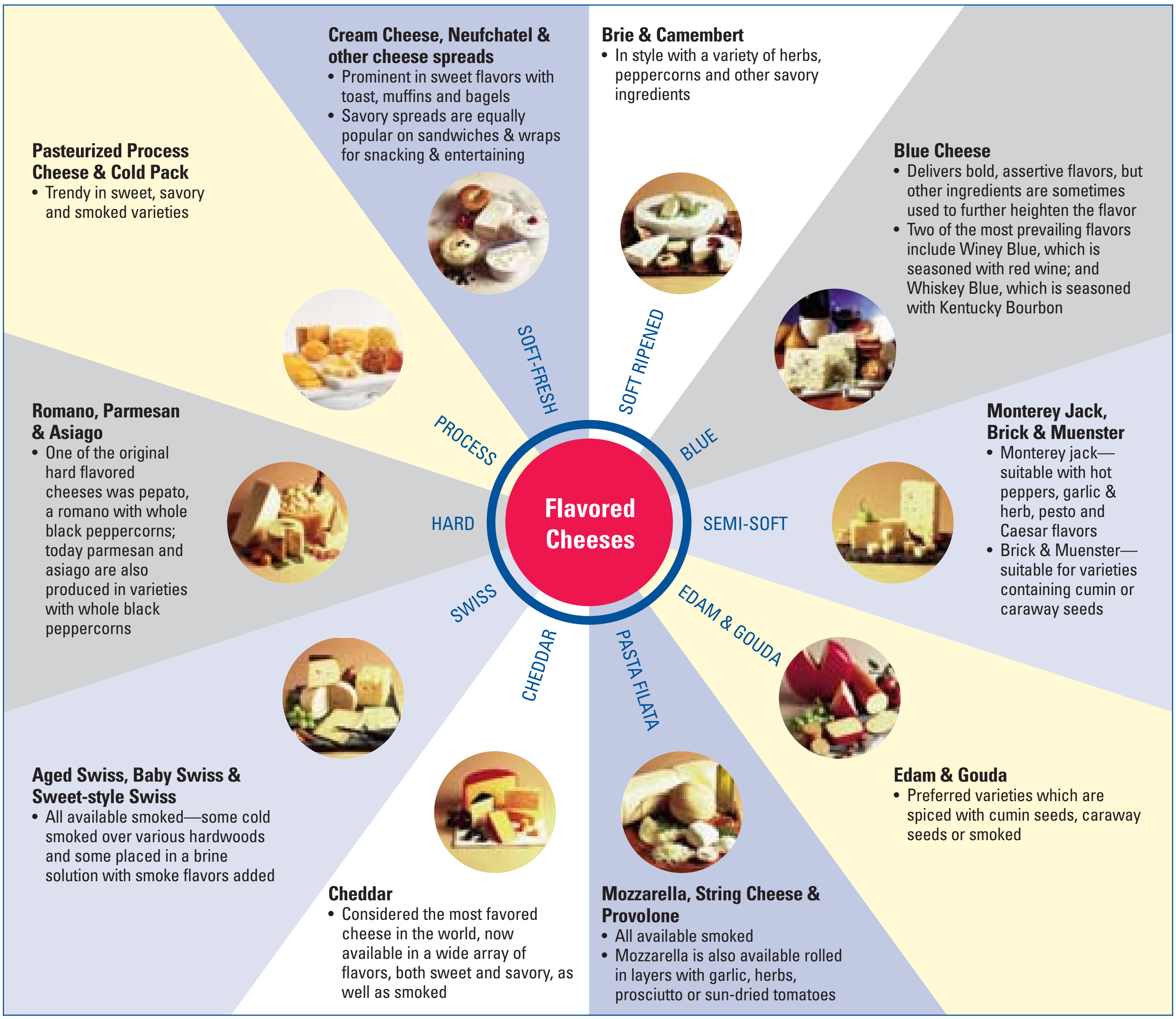
U.S. Flavored Cheeses: a Combination for Every Palate

U.S. cheeses flavored with other ingredients have always been popular, but today their popularity is soaring, and for many valid reasons. Flavored cheeses provide consumers with unique tastes that help spice up the daily menu. These cheeses start with natural or process cheeses that are produced according to their original standards of identity. Additional permitted ingredients are then added to the cheese to make it a "flavored cheese." Available in a vast array of cheese varieties, flavors and convenient forms, some of the most popular seasonings within these cheese varieties include:

Sweet
- Honey, maple syrup, chocolate and liqueurs
- Fruits & fruit juices including blueberry, strawberry, cranberry, apricot, pineapple and many others

Spicy
- Peppers including jalapeno, habanero, chipotle, cayenne and pepperoncini
- Black peppercorns, green peppercorns, horseradish and wasabi

Savory
- Herbs & spices including garlic, chives, basil, oregano, rosemary, dill and cumin
- Vegetables like carrots, broccoli, onions and garlic
- Smoke from hickory, apple wood and other hardwoods
- Dried or cured meats and sausages
- Seafood including smoked salmon, shrimp and crab
- Wine, liquor, liqueurs, beer and expresso



Recent Trends in U.S. Flavored Cheeses

When U.S. consumers buy a new snacking cheese at the supermarket or order a restaurant dish made with U.S. cheese, they may be surprised to find flavors far removed from the traditional dairy case. Today's flavored cheeses are expanding in number and variety, inspired by tastes that are much more common in the supermarket produce aisle, wine section, ethnic foods aisle, and even the dessert case. Although plain cheeses still comprise the overwhelming majority of new cheese products and menu dishes, flavored cheeses offer an exciting way for consumers to experiment with new taste profiles and reinvent some of their traditional favorites.

When it comes to flavored cheese, U.S. manufacturers and restaurants realize that consumers like it hot. According to Mintel's GNPD (Global New Products Database), jalapeno and chipotle were the most popular flavors among U.S. cheeses launched from January 2006 to October 2007. These pepper flavors have also found their way into restaurant kitchens. Pepper jack varieties are the overwhelming favorite among foodservice flavored cheeses and appear in dishes ranging from burgers and sandwiches to quesadillas and fondues.

Interest in spicy pepper flavors has been bolstered by the growing Hispanic population and renewed interest in authentic ethnic foods—a trend underscored by the fact that 66% of American consumers now use Mexican sauces, according to Mintel Reports. Cheese manufacturers have been savvy in capitalizing on these changing tastes by launching new products including salsa jack cheese and cream cheese spreads with salsa. Ethnic flavors go beyond Hispanic-inspired ingredients, however. A variety of flavored cheeses that leverage Mediterranean and Italian traditions also are becoming more common. Sun-dried tomato, basil, and red pepper are among the most popular flavors.

Cheese has always been a natural match for beer and wine, but rarely have cheeses actually included these beverage flavors. Bolstered by consumers' increasingly sophisticated palates, times have changed, and wine varietals including Merlot, Chardonnay, Cabernet, Sauvignon, and Port now flavor cheddars, process cheeses, dips, and spreads. Even beers—once the mainstream cousin to premium wine—have gone upmarket and trickled down to flavored cheese. Cabot Creamery, for instance, launched an IPA (India Pale Ale) Cheddar Cheese late last year.

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Just as consumers' intensifying quests for new flavors have led manufacturers to create beer- and wine-inspired cheeses, they have also sparked the development of cheeses that marry sweet and savory profiles. Typically, cream cheese has been a segment where sweet flavors are used liberally. Consider Panera Bread, a casual dining chain specializing in upscale sandwiches and salads, that offers a honey walnut cream cheese; and Bob Evans, a family-oriented restaurant brand offering traditional American favorites, that stuffs its French toast with vanilla-flavored cream cheese. However, retail manufacturers have moved beyond cream cheese to explore how sweet flavors can enliven traditionally savory cheeses. Varieties made with blueberry, cranberry and orange are now appearing on supermarket shelves.

Although flavored cheeses traditionally have been delivered in chunk and spread formats, more varieties now are being launched in shredded styles. These flavorful shreds have a broad range of applications, from salads and sandwiches to casseroles, and meet the needs of consumers who want convenience without compromising bold taste. Flavored shreds allow consumers to easily incorporate cheese into their favorite dishes without having to use a grater, and now they are available in more varieties than ever before. Dairy Farmers of America's Borden brand has been particularly innovative with its *Shred Medleys* line launched in fall 2006. Shredded cheddar and monterey jack cheeses come with a Season Sensations pack available in such varieties as Tuscan Herbs, Pesto Parmesan, and Garden Blend. Other manufacturers have introduced varieties inspired by Hispanic and Southwest flavors including jalapeno and chipotle.

Given the growing diversity of U.S. flavored cheeses, there is tremendous opportunity to sell these offerings on supermarket shelves. Flavored cheeses are often positioned as gourmet or premium foods, so their sophisticated flavors that marry sweet and savory tastes, feature bold spices, or include ethnic-inspired ingredients should be highlighted. Varieties that incorporate unexpected flavors such as wine, or that come in non-traditional formats such as shreds, will appeal to consumers who may not have experienced the range of today's U.S. flavored cheeses.

Similarly, restaurants have infinite possibilities when incorporating flavored cheeses in their dishes. These cheeses can enliven traditional offerings such as sandwiches and offer a modern twist on classic favorites. Cheese plates increase their flavor quotient when fruit- or beer-flavored cheeses are added, while pizzas gain a new taste profile altogether with the addition of smoky provolone or garlic mozzarella. Given that U.S. cheese manufacturers are constantly innovating with their flavored offerings, the potential for using these cheeses is enormous.

Fat Pre-emulsion Technology Using Whey Proteins

By Dr. Gits Prabhu, PHD Technologies LLC

In processed meats such as sausages, hot dogs and bologna, the binding of fat and water is accomplished by proteins; however, all proteins are not equal in their functionality. Some types of proteins such as whey protein concentrate with 80% protein (WPC 80) are better suited to perform fat/water binding than others.

During the formation of a fine sausage emulsion, a relatively large number of small fat or oil droplets are liberated from the fat cells. All this fat needs sufficient protein coating to prevent it from flowing back together during heating.

The myofibrillar fraction of the meat proteins constitutes most of the fat/water binders in a meat emulsion. The myofibrillar proteins are preferentially adsorbed to the fat/water interface resulting in an alteration in the molecular structure. In other words, the myofibrillar proteins become preferentially denatured. Consequently, this protein fraction can no longer contribute to the very important heat gelation within the meat matrix. Because the myofibrillar fraction is partly consumed by the fat, it loses water-binding and heat-gelation capacity within the meat matrix.

The way to solve this problem is to use a free fat pre-emulsion containing a non-meat protein thereby saving the myofibrillar proteins for water binding and structure formation. The best non-meat protein available is WPC 80, which has excellent emulsifying capabilities, and by nature is strongly attracted to the fat/water interface. If whey proteins get the opportunity to surround the free fat particles during chopping or blending before the myofibrillar proteins, the latter are saved from alteration in the molecular structure and loss of water-holding capacity is avoided.

The emulsifying action of WPC 80 produces small fat globules that prevent shrinkage by lodging within the swollen meat fibers. Another important advantage of WPC 80 as opposed to many other non-meat proteins is that their presence does not disturb the gel formation of the meat protein.

Pre-emulsion

Using various proportions of WPC 80, fat and water, a viscous pre-emulsion is obtained with a very fine texture and consistency, and can be added to the meat matrix during chopping or blending. This type of pre-emulsion technology has many advantages for the meat processor. The pre-stabilization of fat allows much greater freedom in the development of recipe formulations. The fat pre-emulsion system is stable across a broad range of temperature. When the fat is pre-emulsified, its off-flavor is virtually eliminated in the final product. In least-cost formulations, using cheaper types of fat leads to considerable cost savings. The addition of pre-emulsions should not exceed half the total fat content. The pre-emulsion made from WPC 80 can be added to a standard recipe up to 20% to achieve a good product at a considerably lower price.

Preparation of the Pre-emulsion

The procedure used to prepare the 1:5:5 or 1:20:20 (WPC 80: pork fat: water) emulsion is extremely important in order to achieve emulsion stability. A key factor is that the fat globules must be subject to sufficient shear to reduce their particle size. As most animal fats are solid at ambient conditions, increasing the temperature aids in the development of a stable emulsion (Figure 1).

Pre-emulsion procedure:

1. Chop pork fat at high speed for approximately 5 minutes until temperature stabilizes. Fat should be smooth and almost liquid. Note: Temperature will typically stabilize between 27°C and 35°C.
2. Add WPC 80 and guar gum*.
3. Add room-temperature water slowly until emulsion inverts (typically requires approximately 2/3 of the water, depending on shear and temperature.)
4. Continue chopping at high speed until the temperature reaches 35-40°C. *Note: Emulsion viscosity will significantly increase as emulsion inverts.*
5. Add remaining water** and chop just until incorporated.
6. The resulting pre-emulsion is white, stable and smooth with a viscous texture.
7. Keep cold until use.

** The guar gum is used only to increase the viscosity of the fat and water mixture and increase friction for temperature increase.*

*** In order to decrease the temperature of the emulsion rapidly, ice can be used at the end of the production process.*

Figure 1: WPC 80 Pre-emulsion Procedure

The pre-emulsion can be added to a processed meat recipe. Pre-emulsions prepared using the above procedure have been extensively tested under conditions to simulate the thermal processing of sausages. When subject to 75°C (the typical temperature used for cooking sausages) and above, the resulting cooked emulsions form a very white colored, smooth, cut-able texture with no fatting out or water separation (Figure 2). In retorted or sterilized products the complete stability of the emulsion is important to prevent any fatting out in the finished product.

Figure 2: 1:20:20 (WPC 80: pork fat: water) Pre-emulsion Cooked at 90ºC for 1 hour

Advantages of WPC 80

WPC 80 is a highly functional ingredient. It has excellent solubility, low viscosity and the ability to form strong, elastic, irreversible gels whose gel strength increases as the temperature increases. This property makes it an ideal protein for inclusion in products cooked to temperatures of 75°C and above as well as retorted products.

WPC 80 is an ideal protein source for use in fat pre-emulsion systems. Having hydrophillic and hydrophobic regions, the protein aligns at the oil-water interface, "coating" the fat droplets, which creates a steric hindrance to coalescence and fat separation. In addition, WPC 80 forms an irreversible gel-network when thermally processed, stabilizing the emulsion and providing texture to the finished product.

Table 1: Thai Style Hot Dog Formulation Using 1:5:5 (WPC 80: pork fat: water) Pre-emulsion Replacing Lean Meat and 1:20:20 (WPC 80: pork fat: water) Pre-emulsion Replacing 1:5:5 (ISP: pork fat: water) Pre-emulsion

Ingredients	Control	Test 1	Test 2
Chicken leg meat	23.00	20.00	23.00
Chicken breast meat	15.00	13.00	15.00
Pork 80:20	5.00	5.00	5.00
Chicken fat	5.50	5.50	5.50
Pork fat	26.00	26.00	26.00
Salt	0.95	0.95	0.95
Sodium nitrate	0.30	0.30	0.30
Sodium tripolyphosphate	0.20	0.20	0.20
Sodium erythorbate	0.05	0.05	0.05
ISP emulsion (1:5:5)*	5.50	5.50	5.50
WPC 80 emulsion (1:5:5)**	0.00	5.00	0.00
WPC 80 emulsion (1:20:20)***	0.00	0.00	5.50
Spice	2.86	2.86	2.86
Starch	2.00	2.00	2.00
Ice	13.64	13.64	13.64
Total	100.00	100.00	100.00

**1:5:5 ISP emulsion contains 0.5% ISP, 2.5% pork fat and 2.5% water*
***1:5:5 WPC 80 emulsion contains 1% WPC 80, 5% pork fat and 5% water*
****1:20:20 WPC 80 emulsion contains 0.13% WPC 80, 2.60% pork fat and 2.60% water*

Hot dog procedure:

1. Chop lean meat with salt, sodium tripolyphosphate, sodium nitrite, sodium erythorbate and half the ice until a temperature of 5-6°C is reached.
2. Add chicken fat, pork fat, ISP emulsion or WPC 80 emulsion, spice, starch and the remaining ice; and chop at high speed until the temperature reaches 10°C.
3. Stuff into peelable cellulose casings.
4. Cook in a smokehouse to an internal temperature of 72°C and store at <4°C.

Applications

Sausages may be considered as an emulsion of fat globules stabilized in a protein matrix. While in some formulations, the native meat proteins are sufficient to stabilize the emulsion during cooking; frequently the formulation will require the use of other proteins to prevent fatting out, reduce purge and improve texture. Often a 1:5:5 fat pre-emulsion made with WPC 80 can be used to replace a portion of the lean meat in a formulation, providing improved texture and mouthfeel while significantly reducing costs (Table 1, Test 1).

A 1:20:20 fat pre-emulsion with WPC 80 may be used to replace a 1:5:5 fat pre-emulsion made with soy protein isolate (ISP) at slightly higher costs (Table 1, Test 2). For many years, ISP has been the protein chosen by most meat processors due to its lower cost. However, when a WPC 80 pre-emulsion is used instead of an ISP pre-emulsion, the resulting product has a firmer texture, improved color, improved flavor and a creamier mouthfeel.

The use of a pre-emulsion with WPC 80 contributes enormously to product quality and stability in those cases where the lean meat content is comparatively low and the technological performance of the meat used is poor. The great advantage of this method is that it allows a broad range of products to be made with an extreme optimization of recipe variations and very significant cost savings. In addition, the meat products made with this technology show good quality and greater heat stability than products that are more expensive and are made in the conventional way.

Benefits of using WPC 80

Replacing 5% of the chicken breast and leg meat with 1:5:5 WPC 80 emulsion in a chicken hot dog formulation (Test 1), resulted in a product with increased cook yield, improved texture and mouthfeel and 4% cost savings. Replacing the 1:5:5 ISP emulsion in the formulation with a 1:20:20 WPC 80 emulsion (Test 2) resulted in a product with a firmer texture, creamier mouthfeel and improved flavor, at slightly higher cost.

The Role of Dairy Products in Weight Management

Hunger and malnutrition have long been a global concern, primarily in developing and underdeveloped nations. Until recently, undernutrition was the most prominent malnutrition-related problem in the world. As countries develop and have greater access to food supplies. there is a shift from undernutrition to excess energy (calorie) consumption, resulting in a population with a larger number of overweight and obese people.

This global epidemic, termed "Globesity" by the World Health Organization (WHO), is predicted to cause a variety of serious health disorders, including diabetes, cardiovascular disease and hypertension, in millions of people if it is not brought under control. These health risks are a major factor in the continued rise of medical care costs and a reduction in life expectancy.

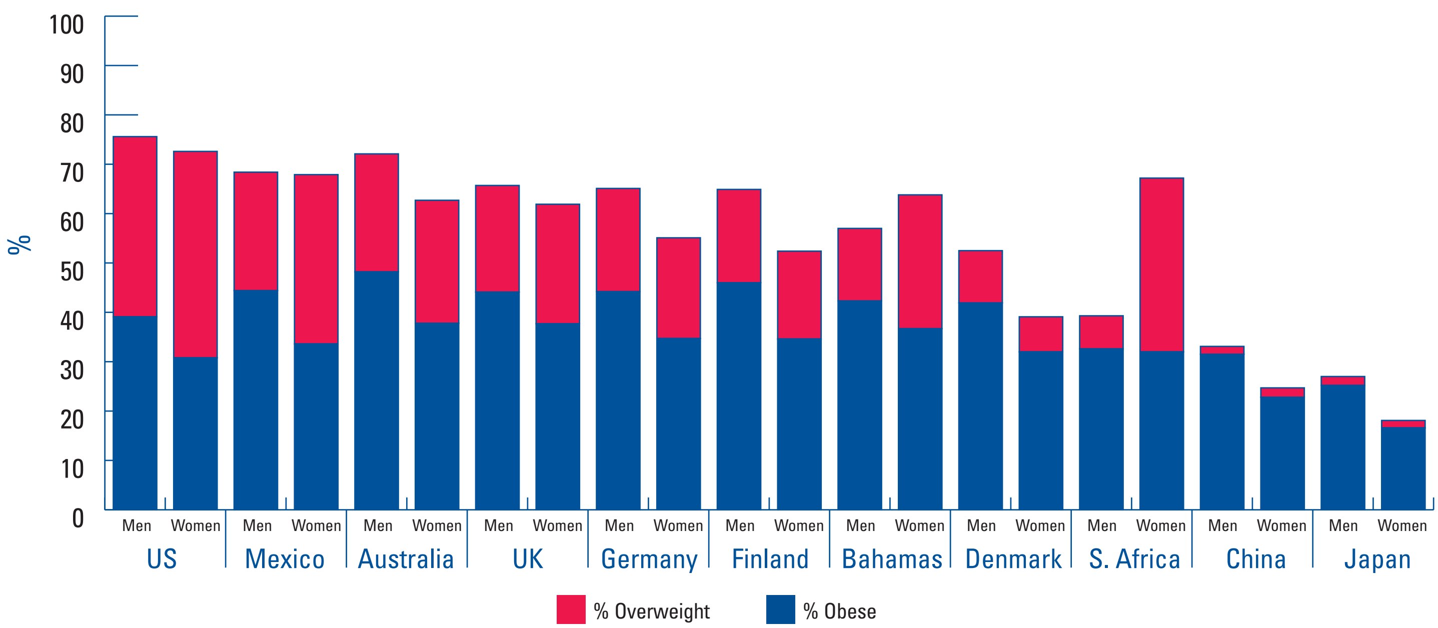
The United States currently has the highest prevalence of obesity in the world. National studies report that over 66% of adults and 17% of youth in the country are obese or overweight. The trend among U.S. youth is especially alarming with 14% of children ages 2-5 and 19% of children ages 6-11 identified as being overweight. Once perceived as being an issue only in the U.S., obesity has now reached global status and is a highly visible public health concern. In 1995 there were an estimated 200 million obese adults worldwide. Today, the number has grown to well over 300 million, including more than 115 million people in developing countries.[1]

Economic expansion has been blamed for the increase in obesity in countries like China, where today, a higher standard of living in urban areas equates to an increase in food availability. This, combined with a more sedentary lifestyle, has resulted in 8% of 8 to 12 year olds in China's cities being obese, with an additional 15% who are overweight. However, malnutrition is still a concern in many of China's rural areas. The double-sided challenge of hunger/undernutrition versus obesity commonly coexists in the

same country, region or city. For example, in Europe there are an estimated 125 million obese people and another 23 million people who are undernourished. Nutrition is critical as food availability does not equate to proper nourishment. Many countries have large numbers of people with energy (calorie)-rich but nutrient-poor diets that may be lacking proteins and other essential nutrients.

The cause of overweight and obesity is multifactorial and the successful prevention and/or treatment depend on multiple actions. Strategies to address the problem have been largely focused on increasing energy expenditure (physical activity), reducing energy (calorie) intake,

Percentage of Obese and Overweight Men and Women by Country – Ages 15 and Up



Source: WHO, 2005

To view information for a country not listed please visit the following webpage:
http://www.who.int/ncd_surveillance/infobase/web/InfoBasePolicyMaker/reports/Reporter.aspx?id=1

or a combination of both. A promising beneficial role for dietary calcium and dairy products in weight management has emerged. This article will review the current scientific evidence, including human clinical, observational and animal model studies that have explored the relationship between the consumption of dairy foods and weight management. It will also explore the plausible mechanisms by which dietary calcium in dairy products may favorably affect body weight, body fat and lean mass.

Dairy Calcium & Weight Loss

Numerous studies using whole, reduced fat and fat free dairy products have been conducted to explore the role of dairy foods in achieving and maintaining a healthy weight. They included clinical studies in overweight and obese adults who had been consuming low amounts of calcium on a regular basis at baseline. A number of these studies have shown that reduced calorie diets containing three daily servings of dairy foods, such as reduced-fat milk, yogurt and cheese, help people lose more weight compared to reduced calorie diets with limited amounts of dairy products. This has highlighted a beneficial role for highly nutritious, calcium-rich dairy products in weight management.

A multi-center clinical study of overweight and obese adults, conducted over a 12-week period, found that dairy-rich diets appeared to increase weight loss by targeting the fat storage compartment during calorie restriction. The participants consumed 3 servings of dairy per day (approximately 1,400 mg of total calcium per day) and reduced their calorie intake by 500 kcal per day. The result was a significant reduction in body fat, trunk fat and waist circumference. There was also a trend towards greater weight loss in the group consuming 3 dairy servings per day compared to groups receiving a low-calcium control diet or a calcium rich diet supplied by non-dairy calcium supplements.[2]

Weight reduction is often a slow and challenging process and, maintaining weight loss may be even more difficult. Researchers often find that up to 50% of lost weight is regained within a one-year period and approximately 90% is regained within 5 years. Scientific evidence, including several human clinical trials, has indicated a beneficial role for calcium-rich dairy foods on body weight and body fat. Human clinical trials are considered to be the "Gold Standard" of proof in the research world.

A recently published study in the Journal of Nutrition explored the effect of dietary calcium from dairy foods on weight maintenance in 103 obese and overweight women who had lost weight over a 22-week period. The researchers used regression analyses to explore the relationships between changes in dietary calcium, energy intake, and weight regain. Data for both dietary calcium and total energy intake (kcal/day) was obtained from 5-day food records (FR) and Block '98 food frequency questionnaires. At the end of a 6- to 18-month follow-up period, researchers used a statistical approach to control for changes in energy intake and found that when energy intake was held constant, a 100 mg increase of daily calcium resulted in less weight regain. They concluded that "dietary calcium from dairy foods may be inversely related to weight regain following a weight loss diet".[3]

Some research studies have found no significant differences in loss of body weight and fat between low dairy and adequate dairy intake. The impact of dairy foods on body weight and fat loss may be dependent on factors including energy intake, initial body weight and a person's baseline calcium or dairy food intake. When these factors are taken into account, diets including adequate amounts of dairy compare favorably to diets with limited dairy foods and low calcium intake in terms of weight management. Some studies also show that calcium from dairy products is more effective in weight loss than calcium obtained from dietary supplements.[2,4] Natural dairy calcium is readily available to the body and easily absorbed. Additional research is needed to better understand the role of calcium and other bioactive components in dairy products, such as protein, branched-chain amino acids, or ACE inhibititory peptides, in weight management.

Possible Mechanisms of Action

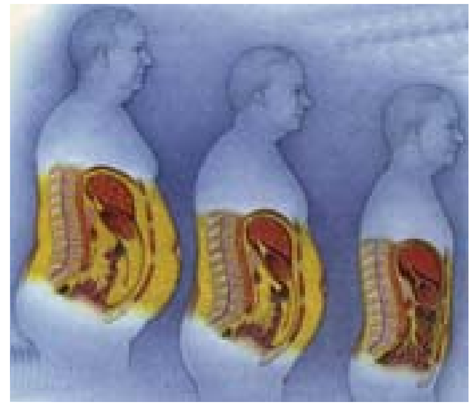
Animal, cellular, and human studies indicate there are multiple mechanisms that support the ability of calcium and dairy foods to regulate the use of fat-calories by the body, resulting in a lower body weight and less body fat.

Dairy Protein and Satiety

Dairy products are well known as an excellent source of high quality protein. Protein has been shown to have a greater affect on satiety in comparison to fats or carbohydrates and an increase in satiety often results in reduced food consumption. For example, in a 12-week clinical trial, individuals who increased their intake of dietary protein from 15% of calories to 30% of calories while maintaining a constant carbohydrate intake, substantially decreased their at-will intake of calories and reported a significant decrease in hunger.[5] Another recent study on 46 obese and overweight women found that a high protein diet improved the perceptions of satiety when the subjects were following a calorie restricted diet.[6]

In addition to promoting satiety, adequate amounts of protein are essential in dietary plans for weight maintenance or reduction to help minimize the loss of lean body muscle. Muscle loss often occurs in conjunction with weight loss and it negatively affects both health and metabolism. Research studies have shown whey protein to be highly effective in helping maintain lean body muscle during weight loss.[7]

An additional benefit of whey protein based on several studies is its ability to suppress hunger more effectively than other proteins.[8] Researchers theorize that the bioactive components in whey protein play an important role in its ability to positively impact weight maintenance and weight loss. Future studies hope to identify more information about the specific mechanisms and components involved.



Body Mass Index Chart

Weight (kg/lbs)	Height (in) 58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76
(ft/in)	4'10"	4'11"	5'0"	5'1"	5'2"	5'3"	5'4"	5'5"	5'6"	5'7"	5'8"	5'9"	5'10"	5'11"	6'0"	6'1"	6'2"	6'3"	6'4"
(m)	1.47	1.49	1.52	1.54	1.57	1.60	1.62	1.65	1.67	1.70	1.72	1.75	1.77	1.80	1.82	1.85	1.87	1.90	1.93
45/100	21	20	20	19	18	18	17	17	16	16	15	15	14	14	14	13	13	13	12
48/105	22	21	21	20	19	19	18	18	17	16	16	16	15	15	14	14	14	13	13
50/110	23	22	22	21	20	20	19	18	18	17	17	16	16	15	15	15	14	14	13
52/115	24	23	23	22	21	20	20	19	19	18	18	17	17	16	16	15	15	14	14
54/120	25	24	23	23	22	21	21	20	19	19	18	18	17	17	16	16	15	15	15
57/125	26	25	24	24	23	22	22	21	20	20	19	18	18	17	17	17	16	16	15
59/130	27	26	25	25	24	23	22	22	21	20	20	19	19	18	18	17	17	16	16
61/135	28	27	26	26	25	24	23	23	22	21	21	20	19	19	18	18	17	17	16
64/140	29	28	27	27	26	25	24	23	23	22	21	21	20	20	19	19	18	18	17
66/145	30	29	28	27	27	26	25	24	23	23	22	21	21	20	20	19	19	18	18
68/150	31	30	29	28	27	27	26	25	24	24	23	22	22	21	20	20	19	19	18
70/155	32	31	30	29	28	28	27	26	25	24	24	23	22	22	21	20	20	19	19
73/160	34	32	31	30	29	28	28	27	26	25	24	24	23	22	22	21	21	20	20
75/165	35	33	32	31	30	29	28	28	27	26	25	24	24	23	22	22	21	21	20
77/170	36	34	33	32	31	30	29	28	27	27	26	25	24	24	23	22	22	21	21
79/175	37	35	34	33	32	31	30	29	28	27	27	26	25	24	24	23	23	22	21
82/180	38	36	35	34	33	32	31	30	29	28	27	27	26	25	24	24	23	23	22
84/185	39	37	36	35	34	33	32	31	30	29	28	27	27	26	25	24	24	23	23
86/190	40	38	37	36	35	34	33	32	31	30	29	28	27	27	26	25	24	24	23
88/195	41	39	38	37	36	35	34	33	32	31	30	29	28	27	27	26	25	24	24
91/200	42	40	39	38	37	36	34	33	32	31	30	30	29	28	27	26	26	25	24
93/205	43	41	40	39	38	36	35	34	33	32	31	30	29	29	28	27	26	26	25
95/210	44	43	41	40	38	37	36	35	34	33	32	31	30	29	29	28	27	26	26
98/215	45	44	42	41	39	38	37	36	35	34	33	32	31	30	29	28	28	27	26
100/220	46	45	43	42	40	39	38	37	36	35	34	33	32	31	30	29	28	28	27
102/225	47	46	44	43	41	40	39	38	36	35	34	33	32	31	31	30	29	28	27
104/230	48	47	45	44	42	41	40	38	37	36	35	34	33	32	31	30	30	29	28
107/235	49	48	46	44	43	42	40	39	38	37	36	35	34	33	32	31	30	29	29
109/240	50	49	47	45	44	43	41	40	39	38	37	36	35	34	33	32	31	30	29
111/245	51	50	48	46	45	43	42	41	40	38	37	36	35	34	33	32	32	31	30
113/250	52	51	49	47	46	44	43	42	40	39	38	37	36	35	34	33	32	31	30

Key: Under-weight Healthy-weight Over-weight Obese

Fat Binding Properties of Calcium

Studies have shown that individuals consuming a high calcium diet (1,800 mg/day) from dairy foods absorb less calories and excrete up to 2.5 times more fecal fat versus subjects on a low calcium diet (500 mg/day). Preliminary data from a recently published study suggest that combining calcium with whey protein increases the effect. Whey protein provides a multitude of bioactive substances that may work synergistically with the calcium to alter lipid metabolism.[9] Additional research is needed in this area to determine the degree of the effect on calorie balance and body composition.

Dairy Products and Energy Utilization

Intracellular calcium plays an important role in regulating fat metabolism by increasing fat storage and inhibiting fat breakdown in fat cells. The levels of intracellular calcium are controlled by calcium regulating hormones. Both human and animal studies have suggested that a high calcium diet inhibits calcium regulating hormones, thereby reducing intracellular calcium. This in turn decreases fat accumulation and increases the release of fat from fat cells.[10]

Research is ongoing in all of the areas previously listed. Current and future studies, including long-term studies and clinical trials, will help provide a better understanding of the mechanisms of action and the specific benefits provided

Nutrient Profile of Select Dairy Products

The following nutrient information is based on recommended serving size. Values are estimates and may vary by product and manufacturer.

Product	Serving Size	Calories (kcal)	Protein (g)	Fat (g)	Calcium (mg)
Skimmed milk	237ml	86	8	0	301
Partially skimed milk (1% fat)	237ml	102	8	2	290
Whole milk	237ml	146	8	8	276
Buttermilk, lowfat	237ml	98	8	2	284
Skimmed milk powder	30g	109	11	0	377
Whole milk powder	32g	159	8	9	292
Yogurt, plain, whole milk	227g	138	8	5	275
Yogurt, plain, lowfat	227g	143	12	4	415
Yogurt, plain, nofat	227g	127	13	0	452
Cottage cheese, lowfat (1% fat)	113g	81	14	1	69
Cottage cheese, creamed, small curd	113g	116	14	5	68
Cheddar or colby cheese, lowfat	28g	48	7	2	116
Cheddar cheese	28g	113	7	9	202
Mozzarella cheese, nonfat	28g	42	9	0	269
Mozzarella cheese, part skim milk	28g	71	7	4	219
Mozzarella cheese, 3.5% fat	28g	146	8	8	276

Source: USDA National Nutrient Database
(http://www.nal.usda.gov/fnic/foodcomp/search/ or www.nutritiondata.com)

by dairy products in terms of weight management.

The positive news is that the obesity epidemic is reversible when societies adopt healthy lifestyles related to diet and physical activity. New information on the negative health risks associated with obesity, and the corresponding high health care costs, have resulted in numerous countries increasing their focus on the problem of obesity. For example, in February of this year the European Charter on Counteracting Obesity was launched in Denmark. The Charter will identify key areas of action including food choices, nutrition labeling and the marketing of food products. Children and youth are an important target of the initiative as their health conditions often continue into adulthood. The increased focus on weight management may provide new opportunities for nutritious, dairy-based products, especially those higher in protein and calcium.

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Summary

In summary, as a means to manage one's weight, current recommendations by researchers and nutritionists include three servings of low-fat dairy foods per day (e.g. 237 ml milk, 227 g yogurt, or 42 g natural hard cheese) in conjunction with a reduced calorie diet and increased physical activity. Dry dairy ingredients can also be used as an option to deliver milk's high quality protein, vitamins and minerals. Ingredients such as SMP, WPC, WPI, milk protein concentrate and isolate are increasingly being recognized as beneficial choices in reformulated and new products targeting weight management. Many dairy ingredients have a mild taste and can be easily added to foods to boost their nutritional value in terms of protein and/or calcium. Dairy products and food products formulated with dairy ingredients are excellent choices for a diet designed to maintain a healthy weight.

For additional information on the role of dairy products and weight management, including product formulations, please visit http://www.usdec.org/publications/monographs.cfm.

Information for this article is based on an article in the September 2007 edition of Dairy Foods magazine titled "Dairy and Weight Management – An Update on the latest advances" by Dr. Peter Huth, Dr. Greg Miller and Dr. Lisa Spence. To view a copy of the original article in pdf format go to http://usdec.files.cms-plus.com/ForeignOffices/PDFs/HuthMiller%20Weight%5F0907.pdf.

Dairy Farmers of America

Dairy Farmers of America, Inc. (DFA) is the leading U.S. farmer-owned dairy marketing cooperative. The Kansas City, Missouri-based cooperative markets 34% of total U.S. milk volume annually, with 27.1 billion liters of milk sourced from more than 19,000 producer members in 48 states.

The cooperative is likewise a major U.S. dairy processing and export force. DFA processing operations span 100-plus affiliated facilities, including numerous joint ventures. DFA annually exports $160 million in cheeses, dairy ingredients, butter and shelf stable drinks. The co-op's 2006 dairy product sales reached $2 billion; combined sales of finished products and raw milk totaled nearly $7.9 billion.

DFA's dairy products and dairy ingredients are marketed in more than 40 countries, with the highest export volume to Asia, Latin America and the Middle East. DFA continues to develop export markets throughout North and South America, Europe, Asia and the Middle East, reports Gabriel Sevilla, DFA's vice president of international sales.

DFA-owned manufacturing plants produce a broad range of dairy products. Cheeses, bottled dairy beverages, infant formulas, cheese sauces, cream, butter, butter oil and dairy ingredients exported under DFA-owned brands include *Golden Cheese, Enricco and Jacobo cheeses; Farmers' Cheese; Keller's* butter and *Sport Shake* aseptic beverages. The cooperative additionally licenses the *Borden* brand for cheese products.

Most products from DFA are kosher and halal certified. Many DFA facilities are EU-certified, and additional plants are undergoing the EU certification process. Numerous DFA facilities are also certified for exports to Chile. The co-op's diverse plant capabilities and geographic diversity allows DFA to provide customer-specific product requirements as well as competitive export freight rates, Sevilla says.

"Since DFA has been working for many years to develop products to meet export market requirements, we are ready to supply products to our international customers," Sevilla says. "We work with our customers on processing, product functionality, packaging, labeling, research and export requirements to make sure that the products meet their individual needs."

Decade of Growth

January 1, 2008, marks the 10th anniversary of DFA's formation through the consolidation of four leading U.S. regional dairy marketing cooperatives. The producers and processing operations of Southern AMPI, Inc.; Mid-America Dairymen, Inc.; Milk Marketing, Inc. and Western Dairymen Cooperative, Inc. joined forces on January 1, 1998. Additional regional producer organizations subsequently joined DFA, including Independent Cooperative Milk Producers Association; and California Gold Dairy Products.

DFA is vertically integrated, which allows it to provide quality consistency from farm to finished product, Sevilla says. "Our farmers proudly produce the milk that we use to manufacture our products, with special emphasis on quality, product integrity and safety," he adds.

The co-op's predecessor organizations began to build export expertise in the late 1980s. Two decades later, DFA and its affiliates continue to expand the co-op's international reach.

Scientists at DFA's Technology Center for product development in Springfield, Missouri, utilize state-of-the-art laboratories, a small-scale pilot test plant and a sensory lab to develop new U.S. dairy products and applications to meet the needs of domestic and international customers.

Export Lineup

DFA's international cheese offerings include cheddar, monterey jack, gouda, colby, colby jack, muenster, processed, mozzarella, string and a variety of shredded and sliced cheeses under brands such as *Borden, Enricco, Jacobo, MidAm* and *California Gold.*

Manufacture of added-value dairy ingredients takes place throughout the DFA plant system. Products available for export include condensed milk and cream, dried whey, dehydrated products, nonfat dry milk, buttermilk powder, reduced mineral whey, condensed whey and limited quantities of whey protein concentrate with 34% protein (WPC 34). Milk powder is exported through Dairy America.

DFA's Golden Cheese Company of California facility in Corona, California, will close at the end of 2007. Export cheese and whey sales production will transition to DFA facilities in Minnesota (Zumbrota), Pennsylvania (New Wilmington) and California (Turlock).

DFA exports also include *Keller's* AMF, butter oil and butter as well as retail and foodservice butter under the *Keller's, Borden* and *Plugra* labels. The cooperative also offers international markets its aseptic *Sport Shake* beverages in chocolate, strawberry and vanilla flavors.

Contact Information

Website: www.dfamilk.com

Additional DFA Websites: Borden brand cheese, www.elsie.com; *Keller's Creamery* butter, www.kellerscreamery.com; and Sport Shake shelf stable beverages, www.sportsshake.com

Gabriel Sevilla, vice president of international sales, Dairy Farmers of America, Kansas City, Missouri, USA
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Foremost Farms USA

For more than a century, Foremost Farms USA and its predecessor cooperatives have successfully provided its dairy farmer-owners with a financially strong business driven by efficient manufacturing and marketing of milk and dairy products. The earliest predecessor organizations to Foremost Farms were founded in the late 1890's.

The Baraboo, Wisconsin-based dairy cooperative creates a full range of dairy products and ingredients at 19 processing facilities in the Upper Midwestern states of Wisconsin, Minnesota and Iowa. Nearly 2,700 dairy farmer members from the region provide Foremost Farms with a steady milk supply, reaching 2.3 billion liters in 2006 to make Foremost Farms number six in milk volume among U.S. dairy cooperatives.

A full-line dairy processor, Foremost Farms' total 2006 dairy product sales topped $1.2 billion. The co-op's dairy ingredient, cheese and butter products are exported by trading partner James Farrell & Co. of Seattle, Washington. About 10% of Foremost Farms' ingredient production is exported.

Foremost Farms dairy ingredients for export include sweet whey, demineralized whey, dairy product solids/permeate, whey protein concentrate and lactose. Its butters and cheeses including cheddar, mozzarella and provolone are likewise sold internationally.

Foremost Farms' products reach markets including China, Thailand, the Philippines, Singapore, India, Turkey, Kyrgyzstan, Mexico, Ireland and Denmark. The co-op continues to explore new opportunities in dairy proteins and other whey components, says Keith Gretenhart, Foremost Farms' director of sales and marketing.

Joining Forces

Foremost Farms USA was created in 1995 through the merger of two Wisconsin dairy organizations, the Wisconsin Dairies Cooperative and Golden Guernsey Dairy Cooperative.

The co-op has continued to grow, producing approximately 11,000 MT of butter, 224,000 MT of cheese and 139,000 MT of whey products annually. To tap into efficiencies and add value to products and services, in 2006 Foremost Farms combined separate cheese and whey ingredient divisions to form its new manufactured products division.

Foremost Farms aims to provide cost-efficient, additional value to customers. An example is the grant-funded retooling of Foremost Farms' Clayton, Wisconsin, cheese facility to produce provolone cheese in sliced lengths at customer request.

"The flexibility to make unique products and ingredients for individual customers is one of the ways we'll continue to grow our business," says Gretenhart.

Cheese & Ingredient Expertise

Foremost Farms' ten cheese and seven dairy ingredient producing facilities are located in the states of Wisconsin, Iowa, and Minnesota; production volume is ranked in the top 15 U.S. cheese companies. Foremost Farms' predecessor organizations have 30 years of whey marketing experience, and six Foremost Farms ingredient facilities are audited by the American Institute of Baking.

Cheese makes up more than half of Foremost Farms' total annual net sales. Foremost Farms offers bulk cheese as well as cheese sticks, blends and shreds for the foodservice and food processing industries.

Dairy ingredients account for a growing percentage of Foremost Farms' annual sales, rising from 6.3% in 2004 to 9.1% in 2006. International customers in the bakery, pizza, food processing, infant formula, pharmaceutical and feed industries utilize the co-op's whey-derived ingredients to achieve better taste, higher protein content, product consistency, shelf life and production efficiency. Foremost Farms additionally customizes ingredients to meet the needs of new and existing products, Gretenhart says.

Ingredients Options

- Daritek™ WPC – adds multiple functionalities; can replace added emulsifiers, stabilizers, starches and other proteins. Suited for beverages, confections, baked goods, dairy products, snacks, soups, salad dressings and sauces.
- Daritek™ HS – a heat stable whey protein concentrate that will remain soluble during aseptic and retort processing. Suited for protein drinks, smoothies, and other beverage applications.
- Nutritek® demineralized whey – several levels of protein and mineral content provide mineral levels to meet the specific dietary requirements of infant formula, confectionery coating, low-salt and frozen dessert products.
- Edible lactose – 80 and 200 mesh and refined forms; crystal size/type provides desired solubility, mouthfeel and physical properties in confections/bakery, frozen dessert, sauce/salad dressing, dry mix, frozen/canned and jam/jelly applications.

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Everyone who completes the survey by January 15th, 2008 will be entered into a drawing to win one of fifty 1GB USDEC USB drives.

Part I

Please evaluate the 5 main sections of the newsletter by selecting the appropriate response to each statement/question. If you do not read a particular section, select "Not Applicable".

Industry News	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Not Applicable
The articles are easy to read.	☐	☐	☐	☐	☐	☐
The topics chosen are interesting/ stimulating.	☐	☐	☐	☐	☐	☐
This section is important to you, professionally, or to your business.	☐	☐	☐	☐	☐	☐

Is the information currently meeting your needs/expectations? ☐ Yes ☐ No Please explain: ____________________

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Cheese & Manufactured Products	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Not Applicable
The articles are easy to read.	☐	☐	☐	☐	☐	☐
The topics chosen are interesting/ stimulating.	☐	☐	☐	☐	☐	☐
This section is important to you, professionally, or to your business.	☐	☐	☐	☐	☐	☐

Is the information currently meeting your needs/expectations? ☐ Yes ☐ No Please explain: ____________________

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Ingredients	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Not Applicable
The articles are easy to read.	☐	☐	☐	☐	☐	☐
The topics chosen are interesting/ stimulating.	☐	☐	☐	☐	☐	☐
This section is important to you, professionally, or to your business.	☐	☐	☐	☐	☐	☐

Is the information currently meeting your needs/expectations? ☐ Yes ☐ No Please explain: ____________________

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Nutrition	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Not Applicable
The articles are easy to read.	☐	☐	☐	☐	☐	☐
The topics chosen are interesting/ stimulating.	☐	☐	☐	☐	☐	☐
This section is important to you, professionally, or to your business.	☐	☐	☐	☐	☐	☐

Is the information currently meeting your needs/expectations? ☐ Yes ☐ No Please explain: ____________________

____

Meet Our Members	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Not Applicable
The articles are easy to read.	☐	☐	☐	☐	☐	☐
The topics chosen are interesting/ stimulating.	☐	☐	☐	☐	☐	☐
This section is important to you, professionally, or to your business.	☐	☐	☐	☐	☐	☐

Is the information currently meeting your needs/expectations? ☐ Yes ☐ No Please explain: ______________________________

____

Part II

Please select the appropriate response to each statement/question.

	Yes	No
I currently buy U.S. dairy products.	☐	☐
I plan to increase the amount of dairy products I buy from the U.S. in 2008.	☐	☐
The newsletter has positively changed my perception of U.S. dairy products.	☐	☐
The newsletter has helped me identify new potential suppliers of U.S. dairy products.	☐	☐
The newsletter has identified new applications for U.S. dairy products relevant to my business.	☐	☐
The newsletter has increased my knowledge of the variety of dairy products offered by U.S. manufacturers.	☐	☐
I usually read the newsletter the first week it is available.	☐	☐
I share the newsletter with others.	☐	☐
Have you participated in USDEC activities, such as seminars, trade missions, etc.?	☐	☐
Is the overall layout of the newsletter easy to navigate?	☐	☐
	Read Online	**Download as PDF**
The newsletter is available to read online and to download as a PDF, which of these methods do you most often utilize?	☐	☐

Part III

Please respond to the following.

I would like more information on: ______________________________

____

Suggestions for future topics: ______________________________

____

General comments: ______________________________

____

Part IV

Please fill out the following information to be entered into the drawing.

Name: ______________________ Title: ______________________

Department: ______________________ Company: ______________________

Address: ______________________________

Email: ______________________________

We thank you for taking the time to complete this survey. Please send back to:
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