Cornell Improves Maple Cream for the 2004 Maple Season

By Nate Abbott, Cornell University

Inspect most breakfast tables, and you find the usual spreads: peanut butter, jelly, cream cheese, and jam. Cornell University microbiologist Randy Worobo and food scientist Olga Padilla-Zakour, of the New York State Agricultural Experiment Station, in Geneva, NY, have increased the shelf life and quality of a little-known alternative called maple cream, making it easier to manufacture and store, and more appealing to the consumer.

Maple cream is the smooth-textured spread made by heating syrup to high temperatures and continuously stirring it as it cools. Despite its name, maple cream contains no dairy products. Instead, it offers the rich flavor of maple syrup in a form that can be drizzled over ice cream, licked off the spoon, or spread on toast, bagels, muffins, or pancakes. Until now, maple cream has not had widespread appeal due to its tendency to mold and separate. Because of these deficiencies, maple cream was only available on a limited basis. Most consumers have never tried it.

Padilla-Zakour and Worobo devised ways to produce maple cream that has a creamier texture and lasts up to six months. To prevent the formation of surface mold, the researchers added a food preservative, potassium sorbate, at a low concentration of 500 ppm. To address the issue of separation, 10 percent of the maple syrup undergoes the process of inverting the sugar from sucrose to glucose and fructose by the addition of the natural enzyme invertase.

The result is a maple cream or maple spread that lasts longer, retains the same flavor, and possesses a creamier texture. The processing will cost producers less than ten cents per pound of finished product, and requires equipment already found in typical maple syrup operations.

Worobo and Padilla-Zakour estimate that developing good manufacturing practices for shelf-stable maple cream could increase production and marketing by 10 percent, resulting in an additional $1.6 million per year in revenue for maple producers. For consumers, it adds value to what is already a naturally sweet product.

Chuck Winship, of Sugarbush Hollow, in Springwater, NY, produces 600 gallons of maple syrup a year, and has sold 200 pounds of maple cream since August. He wrote the grant that drove the maple cream development project, and was one of two industry cooperators, along with Lyle Merle of Merle Maple Farms, located in Attica, NY. In limited taste tests at his sugar shack, Merle has found customers prefer the creamier maple cream 8 out of 10 times. His sales of maple cream have increased 6 percent since he started making the new shelf-stable maple cream last August.
Entrepreneurship Profile

Julie Lapham of Turtledove Gourmet
North Andover, MA
Cheryl Leach, Cornell University

Ten years ago, Julie Lapham was looking to buy tasty food products for her family - ones made in a health-conscious manner, and with natural ingredients. She discovered that supermarkets and health food stores carried only a few specialty and/or gourmet items with the quality she sought. Julie decided she would start producing pesto that met her standards, and she began selling Turtledove pesto to local gourmet and health food stores. Soon local restaurants including Sodexho Marriott chefs were using her pesto in their kitchens. Since then, Turtledove Gourmet has expanded its line to six different pestos, which are sold all over the country in thousands of stores.

Julie chose the turtledove as a symbol to represent her vision of her business. It reflects her values of peace, and purity of product; whenever possible Julie uses healthful, natural, and organic ingredients.

To accommodate the growth of her company Julie found herself in need of co-packing services. Julie explains how she decided to use a co-packer to manufacture her pestos. When I started out, I looked inward, and realized that my strengths are in product development and marketing and decided to use a co-packer for production. When I started, there were limited manufacturing resources for small-scale food producers. It has only been in the past decade that the specialty food business has captured such a large part of the food market.” Co-packers able and willing to do short runs are scattered across the Northeast. Julie experienced many of the classic problems small-scale processors encounter when handing over their carefully developed recipes to co-packers. Some co-packers suggested that she use less expensive ingredients, to make her products easier to sell at higher profit margins. This concerned her because she felt the quality upon which she built her business would be compromised. “The co-packers I encountered at that time were cooks or chefs that wanted to manufacture their own products on a larger scale and needed to fill the down time in their facilities with co-packing,” Julie said. “Unfortunately, co-packaging is a talent and business that is nothing like being a cook or chef.” First attempts at using co-packers resulted in several bad experiences, which included formulas not being followed, (resulting in product that was not shelf stable), and product not delivered on time resulting in lost orders. Eventually Julie found one that she could work with.

Private Label Foods in Rochester, NY, an eight-hour drive from her home, met Julie’s high standards. The resulting business relationship that developed delivered a high quality product from a highly professional company. Usually private co-packers do not have their own product line; co-packaging is their business and they do it well. When Private Label narrowed its product line to tomato-based sauces exclusively, Julie found herself looking for a professional co-packer closer to her home.

“Fortunately, the industry is changing, driving manufacturers to cater to the specialty food producer,” she said.

Other changes Julie has seen is the growth in specialty food outlets and more room on the shelves of bigger food markets such as Whole Food and Wild Oats. For national distribution in the mass market and health food chains Julie encourages processors to use a distributor. For the gourmet market, which includes farm stands, health food stores and cooking stores, she feels that manufacturer representatives are “the best way to go.” Julie suggests that to find the right distributor or manu-
Selling Skills 2003
Bob Weybright, Cornell University
Brian Noder, Vermont Food Venture Center

One of the most recent additions to the NECFE seminar list is “Sharpening Your Selling Skills.” The focus of the one-day seminar is to begin explaining some of the mechanics involved in the process of selling. Material for the seminar was compiled based heavily on the work experiences of both Brian Norder and Bob Weybright. Together they have over 25 years of combined experience in the area of sales and buying.

Brian, a veteran from the buying side of the table, and Bob, with selling experience from a variety of situations, combined their knowledge to present information covering both the buyer and seller. The intent was to offer practical selling tips and suggestions (based on real life experience), while developing an understanding of the process. The premise by which this seminar was developed is that if the total process is understood, a seller can better relate to all parties and more effectively develop a sales strategy.

Credit for the seminar concept can be attributed to NECFE clients throughout the region. Over time it became apparent that the sometimes subtle differences between marketing and selling were often confusing to new companies. Based on conversations and comments from other seminar evaluations, Bob and Brian decided to develop material to help clarify the differences, concepts, and in some cases, overlap. As of this writing, the seminar has been presented in Maine, Massachusetts, Vermont, and New York.

The seminar itself runs a full day, with audience participation encouraged. Since selling is believed to be an ongoing process, an environment is created in which participants are able to learn from each other throughout the day. The discussion of methods and techniques that are proven to be useful are shared with each other to address specific areas of need identified throughout the day.

Material is presented in a sequential; much like one would begin working to develop a selling approach for a product or service. Initial discussions surround pushing or pulling a product through a sales channel. Roll out strategy is a key element of the presentation, building upon the earlier foundation material. Finally, specific activities and events associated with specific sales situations are presented. Some of these include; trade shows, street sales, chain and account sales, and finally, a brief overview of international sales.

While there are numerous sales training programs that can span hours, if not days, this seminar touches upon all aspects that would normally be expected to be covered in the more extensive training programs.

Industry has always considered maple cream to be an under-marketed maple product with great potential. Peter Smallidge, NYS extension forester and director of the Arnot Teaching and Research Forest, in Van Etten, NY, adds, “The marketing opportunities for producers will increase because this new maple cream can be displayed prominently and made more visible to consumers. If the marketing increases consumption and the producers respond to the demand, more syrup will have to be devoted to cream production.”

A Renewed Commitment to New York’s Maple Industry

The success of shelf-stable maple cream is a good example of Cornell’s renewed commitment to the New York maple syrup industry. In December 2003, the College of Agriculture and Life Sciences announced plans to reinvigorate the Cornell Maple Program (CMP). The plan is a cooperative effort among maple producers, extension educators, researchers and others that calls for integrating applied research and extension, and developing strategic and working partnerships with key players in the New York maple industry.

Some of the goals include: rebuilding and upgrading facilities at both Cornell maple research and production sites, the Arnot Teaching and Research Forest in Van Etten, NY, and the Uihlein Sugar Maple Field Station in Lake Placid, NY, and hiring a statewide maple specialist. Peter Smallidge, senior extension associate in the department of natural resources, has already been directed to undertake additional maple extension activities.

More than 1525 commercial producers with 100 or more taps are engaged in maple production in New York, making the Empire State the second-largest maple producer in the U.S. Maple production in New York State was valued at $6.83 million in 2002, and represents more than one-sixth of the total U.S. production.

The maple cream project was supported with funding from a USDA-SARE Farmer/Grower Grant, USDA Fund for Rural America, and the New York State Agricultural Experiment Station.
Ingredient Sourcing for New Food Businesses

Brian Norder, NECFE/ Vermont Food Venture Center

Aspiring food entrepreneurs quickly learn that efficient sourcing of food ingredients is an important step in the recipe scale-up and business development processes. Done correctly, an effective ingredient purchasing program will cut costs and increase production efficiency. Done poorly, it can waste time, incur added expense, affect quality and ultimately compromise the viability of the business.

While an increasing number of specialty foods are being made with fresh, locally grown ingredients, a majority still make using a high percentage of products purchased from outside sources. Deciding where, and in what form to buy these ingredients is as important as any other decision a new business has to make.

Many new food products have their origins in the home kitchen with components purchased at the local supermarket, farmers’ market or grown in the backyard garden. In most cases, none of these will be sufficient to sustain a business of any size.

One common misperception about using locally-grown produce is that it locks you into a seasonal production schedule. Freezing many fruits and vegetables at harvest time is an effective way to extend the processing season. Growers are often willing to do custom plantings in return for a guaranteed market at harvest time. Be aware that if you decide to enter into a supply agreement with a grower for your ingredients, you need a clear understanding of what happens if the crop is short or over abundant. Similarly, you should have an agreement that addresses the possibility that you might fall short of business projections and need less produce than you originally thought. Failure to anticipate any of these scenarios could result in ill-will between you and your grower.

Even if you are using some locally-grown ingredients, it is likely that you will also be purchasing food from a supplier. Supermarket-size retail packs are rarely efficient for wholesale production, and it is usually necessary to seek out larger packs or alternative forms of the raw ingredients.

For scale-up purposes or for small commercial batches, wholesale club stores can be a good source before seeking out wholesale distributors. While their prices may be higher than what you could get from a distributor, you do not need to worry about meeting minimum order size, which is typically $300 to $500 per delivery.

There are both locally and nationally-based food wholesalers you can use, and each has distinct advantages and disadvantages. Local distributors typically have smaller minimum orders, shorter lead times and more interest in working with business startups. Larger national or regional companies have advantages that come with size, particularly that of greater product selection.

A knowledgeable distributor can also be an important member of your product development team. The salesperson for the company can recommend products to streamline your production such as Individually Quick Frozen (IQF) or pre-cut fresh fruits and vegetables.

Food manufacturers and processors themselves can be another great asset. On-line databases such as www.foodmaster.com can direct you to these companies. Most food ingredient manufacturers have technical support staff that can help you with formulations using their product and will usually send samples. Some are more receptive to small businesses than others so if you get a lukewarm reception from one company, try another.

A small investment of time in developing a purchasing plan in the startup phase of your business will pay dividends as you grow and position yourself to take advantages of increased purchasing power when you get bigger.

A Welcome Spanish Import: Cheese Evaluation Expertise

By Carol Delaney, UVM Center for Sustainable Agriculture, Burlington, VT

As Vermont grows, so do the number of cheese makers, and thus there is a growing need for technical advice on cheese recipe development, tests for quality control, and sensory evaluation training for taste. Consumers will pay higher than average prices for Vermont artisan cheeses, but only if the form is consistent and the flavor is good. Most members of the Vermont Cheese Council have been making cheese for less than 5-10 years and are working to perfect their original cheese recipes and to develop new cheeses in order to diversify their product line. For the past three years, the Northeast Center for Food Entrepreneurship (NECFE) has co-sponsored beginner and advanced cheese workshops with the UVM Center for Sustainable Agriculture/Small Ruminant Dairy Project. Now, NECFE has made the commitment to add a full-time associate, Dr. Montserrat (Montse) Almena Aliste from Spain to work primarily with cheese makers in Vermont. She brings years of training in sensory evaluation and the chemistry of cheese and a zest for teaching cheese makers how to make and taste a good cheese.

How did Montse land in the Green Mountains of Vermont from the Green Belt of the Northwest corner of Spain? Her route was circuitous and the story interesting. First, she was born in Ponferrada (meaning bridge of iron), an ancient city on the meandering river Sil and situated on the route followed by St. James the Apostle twenty centuries ago when he came to the Iberian Peninsula to evangelize its inhabitants. The region is replete with beautiful ancient religious architecture such as the Castillo del Temple and Albergue San Nicolas de Flüe. This makes it a popular Christian walking destination, as does the nearby Galicia area, where Montse later moved. Growing up with a love of animals, she first studied to
become a veterinarian at the University of Galicia. After graduation, she found the schedule of a veterinarian overshadowed the romance of working with her animal clients, so she changed course and re-entered school studying Food Science at the University of Santiago de Compostela in Lugo, Spain.

Lugo can also be found in northwest corner of Spain, above Portugal, a former Roman fortress city on a hill that has assimilated rich Christian Cathedrals. This is in the ‘state’ known as Galicia, a venerate Green Belt where the weather is more temperate and winds often bring misty rains from the rugged ocean coastline. After her undergraduate degree she completed her Master’s degree in Analytical Chemistry, Nutrition and Foods Inspection at the same institution. She continued on to get her Ph.D. with her research bringing her to Poligny, France the INRA (Institute National de la Recherche Agronomique), the station for dairy research where she studied cheese microbiology. There, she met Sr. Noella Marcellino who was also working on her Ph.D in cheese microbiology. Sr. Noella is a member of the Abbey of Regina Laudis, a Benedictine cloister in Bethlehem, Connecticut. At the time Montse did not speak any English (she just knew same cheese vocabulary), but they had no trouble communicating because both spoke French fluently. Camaraderie ensued and they kept in touch after Sr. Noella returned to the USA and Montse to Spain where she completed her Ph.D in Food Science in 1998. Immediately, Montse was hired as principal investigator of a research project at the University of Santiago de Compostela where she managed a cheese quality project. Their goal was to refine the technological and sensory characterization of three traditional Spanish cheeses labeled with the Denomination of Origin (a legally recognized branding system that protects the established cheeses from unapproved ‘copycats’). She trained a sensory evaluation panel and developed the sensory forms to evaluate each cheese: Tetilla (little breast) Cebreiro (place of origin), and Arzúa-Ulloa (place of origin). It was her job to collect information from cheese makers to characterize each cheese and identify the sources of variability on the quality of the final product. She was also involved in promoting traditional cheeses at scientific and social events, speaking as a dairy scientist and sensory expert.

In June of 1999, Montse was at the Fancy Food Show in NY, with some friends of the Consorzio of Parmigiano Reggiano, exploring the possibility to enlarge her international experience working in the US cheese business. There, Montse was very lucky because when she visited the American Cheese Society’s booth she found out that her friend, Sr. Noella, had been selected to be a speaker at the annual meeting at Shelburne Farms in Shelburne, VT. This would be in August, a couple of months away. At the American Cheese Society, Sr. Noella met Dr. Paul Kindstedt, Dairy Foods Research Professor at the University of Vermont (UVM), and she shared with him Montse’s resume. Some weeks later Montse visited Vermont and UVM for the first time while there she interviewed with Dr. Kindstedt. She was very impressed with the beauty of the town and the UVM campus; but even more excited by the prospect of meeting Dr. Paul Kindstedt, author of some of the scientific articles that were so valuable in her Ph.D work. “I will never forget the time when Dr. Kindstedt hired me to work in his lab. When I started working with him I knew he was an expert in mozzarella. Over these past years I discovered that Paul is a wonderful person who had a great deal of knowledge in dairy technology and a passion for Vermont and artisan cheese making,” Montse said. Her two years of research focused on identifying the phenomena that determine the functional and textural quality of mozzarella and cream cheeses. Upon the successful completion of her program, she found a job with a Burlington firm evaluating coffee flavor and conducting quality analysis. When the Woodstock Water Buffalo-Star Hill Dairy, Inc. in South Woodstock opened, she became head of the team that developed their recipe for plain and flavored yogurts and mozzarella cheese. There, utilizing her European training and knowledge of the Italian language, she was able to transfer expertise on mozzarella between Italian and American cheese makers. During that time period, she was also enlisted to teach the Sensory Evaluation course at the UVM and part of a cheese workshop held at NECFE to help cheese makers learn about sensory evaluation of cheeses.

Acknowledging Montse’s good relationship with UVM and her extensive training in cheese evaluation, NECFE Associate Director Dr. Cathy Donnelly worked to find funding to secure a position for Dr. Almena. Thus, Montse joined NECFE through the generosity of both The John Merck Fund and an anonymous donor. These funds will support Montse’s position over the next three years as part of the transition from NECFE Vermont to the establishment of the Vermont Institute of Artisan Cheese, which will be formally announced later this spring. While still in the planning stages, the NECFE Vermont staff is working on a cohesive educational, research, and technical assistance program for artisan cheese makers.

We hope that the temperate climate of Vermont, in both weather and cheese producer conviviality, becomes a new home for Montse, who is such a significant resource to Vermont’s artisan cheese makers. To reach Dr. Montserrat “Montse” Almena Aliste, please contact her at montse@uvm.edu
Battenkill Kitchen to Offer Certified Processing Space for the Region

By Annette Nielsen

It was only a little over a year ago that Cornell Cooperative Extension’s Paula Schafer met with Salem Town Supervisor Bruce Ferguson to discuss the possibility of using the kitchen in the Old Washington County Courthouse in Salem as a shared-use kitchen facility.

Nearly 60 people interested in creating their favorite recipes for sale to the public had just attended a “Recipe to Market” workshop in Salem last February hosted by the Northeast Center for Food Entrepreneurship. A core group from that workshop indicated their interest in getting the kitchen up and running.

Since late last spring, these volunteers, members of this not-for-profit and newly named Battenkill Kitchen, Inc., have been readying the space to pass inspections and open its doors to people who need a facility such as this in order to legally process their specialty food items for sale to the public.

They’ve cleaned, painted, made repairs, are offering memberships and have conducted two workshops to raise funds to purchase equipment necessary for commercial processing - items like a 40 gallon steam kettle, a filler and labeler, and a 20 quart mixer are on the list. Commercial-grade equipment like this is expensive, so the group is also looking for quality used equipment as well.

In order for someone to be able to produce a food item for sale, they have to identify travel to one of the few places open to the public (Poughkeepsie, Nelson Farms, in central New York, or Burlington, Vermont) or alternatively, invest a large amount of money to build the infrastructure and purchase the commercial-grade equipment necessary to meet processing specifications and code regulations.

In a shared-use facility such as the Battenkill Kitchen, space can be rented on an hourly basis, thus minimizing the start-up expenses for a small business.

Mary Ann Marschhauser from Hebron has been making homemade mustard for many years, and sharing it with family, friends and co-workers. She’s been constantly urged to market and sell the mustard.

“We’ve toyed with the idea for some time, considered building our own facility on our property, or possibly going to Vermont to produce,” she said. “While attending the ‘Recipe to Market’ workshop last year, I heard about the shared-use kitchen proposed for the soon-to-be vacant space left by the county jail. This would be perfect for me, and only minutes from my home,” Marschhauser went on to say.

She quickly became involved with others to get the project moving forward. She continues, “Being able to share a facility, equipment and resources makes perfect sense. The entire community can benefit when local, small businesses can prosper and grow,” she added.

Producers like Katie Camarro and Jeff Shinaman of Sundae’s Best in Greenfield Center are the type of experienced marketers that could also make good use of the facility in Salem. Camarro spends about 6 hours on the road each week for her round-trip travel to Burlington, Vermont to process their ever-popular hot fudge sauce—and that doesn’t include the time it takes to make the product.

“In light of the tremendous demand within the specialty and gourmet food market that requires a certified kitchen for producers, it’s very forward thinking of the Battenkill Kitchen to create such a space that will draw from a broad base of users,” Camarro said.

“This kitchen offers a great opportunity and resource for our regional agriculture to further value-added production, extending the current growing season with specialty products offered year-round,” said Paula Schafer, who is with the Agricultural Economic Development Program for Cornell Cooperative Extension’s Saratoga and Washington counties.

Co-owners Karen Hess and Keith Sprague of Old Scidmore Farm in Saratoga are looking to the kitchen as a way to expand on the current market season. Sprague and Hess grow a large variety of Asian vegetables, culinary herbs, and some small fruit, in addition to specialty vegetables like white zucchini and black radishes. They sell their product primarily through a CSA in Saratoga (Tuesdays) and Glens Falls (Friday), with the addition of marketing at regional farmers’ markets.

“I think it’s wonderful to have a certified space becoming available for farmers who want to pursue value added product. We hope to be able to develop a product line to sell during the winter months.” Hess said.

Part of the mission of the Battenkill Kitchen, Inc. is to offer a venue for education. Earlier this month, they paired up with the Northeast Center for Food Entrepreneurship, Cornell University’s and Cornell Cooperative Extension’s Agriculture Economic Development Program to conduct two workshops for aspiring food processors—Jams & Jellies, and Acid-
Battenkill Kitchen, continued from P. 6

fied Foods. People came from as far away as Long Island, the Hudson Valley and Central New York to learn about commercial preparation of products using safe manufacturing practices.

Current and future small processors were given information necessary to understand the main processing steps, critical control points, and record keeping to safely manufacture specialty products for the marketplace.

Will Lennon, president of the board of Battenkill Kitchen, Inc., said “With the two-day food processing workshop, we accomplished a major goal, which is to use the space as a teaching platform. We are encouraged by the interest that people have shown about this event and hope that they, and others, will be motivated to become members. By increasing membership, we’ll begin to satisfy our main objective and that is to help people create and package their own food products.”

The Battenkill Kitchen, Inc. is hopeful they’ll raise the necessary funds to purchase equipment and open their doors during this growing season, to take advantage of our region’s plentiful harvest of great fruits and vegetables.

If you’d like to help out, become a member of the Battenkill Kitchen (memberships start at $5), or contribute toward the purchase of an item on the “Wish List”—you can reach Paula Schafer at Cornell Cooperative Extension, at 518-746-2560 or e-mail the kitchen at BattenkillKitchenInc@juno.com.

Evaluation and Feedback from Workshops offered at Battenkill Kitchen

Participants from the Jams & Jellies and Acidified Foods workshops expressed their satisfaction about what they learned there. All responses to the evaluations indicated that the workshop met their expectations. Materials were helpful to their business, and presentations were useful. One constructive comment was that more time be allotted for these technical intensive, hands-on, interactive workshops. A bonus to the formal program was the networking opportunities for the attendees.

The Association of Dressings & Sauces, can be found on their website at http://www.dressings-sauces.org/pressroom_trends

This information is from the 2003 Annual Meeting speaker Julie Currie, of AC Nielsen. If you are an ADS member, you can view her entire presentation on the Members Only section of www.dressings-sauces.org.

• Salad dressing continues to be a household staple in most U.S. households and the high penetration (89 percent) continues.
• Households have increased the dollars they spend for the major dressing and sauce categories: salad dressings are up 3.1% from 2002 and mayonnaise has increased 2.6%.
• 88% of dressing and sauce volume was sold through grocery and mass merchandisers in 2002
• Although consumers are eating more salads, overall they are using less dressing and are paying more per bottle—up to $1.63 per bottle from $1.56 in 2002.
• Dressing and sauce category growth in 2002 stemmed from gains in alternate channels, such as drug stores, club stores and convenience/gas station stores
• Consumers see a different price landscape according to channel with salad dressing. The average unit price difference per channel versus grocery are: $2.06 in grocery, $1.88 in mass merchandisers, $1.42 in club, $1.70 in drug and $2.03 in convenience/gas.
• Consumers see a different price landscape according to channel with mayonnaise as well: $2.20 in grocery, $2.05 in mass merchandisers, $2.23 in club, $2.18 in drug and $2.07 in convenience/gas.
• Dressing and sauces, nearly a $9 billion business, has grown 2.6% over the past three years.
• The 6 major growth categories (salad dressing, ketchup/barbecue/mustard, mayonnaise, dry seasoning, Mexican sauce and spaghetti/marinara) account for 81% of dressing and sauce sales volume in 2002.
• The “salad dressing” growth category drove $1.7 billion in sales in 2002.

Trends in the Dressings and Sauce category, as seen by AC Nielsen:

• Packaging. Inverted squeeze bottles are becoming one of the most widely implemented package designs.
• Color. Child influences on household purchasing increases due to colored products.
• Dual usage. To influence consumption rates, many companies are suggesting alternate uses for existing products such as marinades and dipping sauces.
• Flavor Enhancement. New flavor varieties such as flavored ketchup, mayonnaise, barbecue sauce and mustard are spicing up mature categories.
Effects of Extended Storage on Eggs

ARS News Service
Agricultural Research Service, USDA
Sharon Durham, (301) 504-1611, sdurham@ars.usda.gov

Egg quality and usefulness are safely maintained beyond the sell-by date if eggs are stored properly, according to Agricultural Research Service scientists in Athens, Ga.

ARS food technologists Mike Musgrove and Deana Jones, who are with the agency’s Poultry Processing and Meat Quality Research Unit tested the quality and functionality of table eggs during a 10-week storage period, which is long beyond the current 30-day industry standard for storing eggs on the store shelf. Properly refrigerated and handled, eggs are considered safe for consumption for four to five weeks beyond the sell-by date.

Musgrove looked at bacteria like Salmonella, Escherichia, Enterobacter, Klebsiella and Yersinia that can contaminate eggshells and—if handled or processed improperly—remain on eggs by the time they reach the consumer. However, Musgrove found that after washing and packaging, eggs showed no bacteria of the Enterobacteriaceae family until the fifth week after processing. Washing eggs according to current guidelines removes bacteria from their surface, thus reducing the chances of microbes getting into the eggs once they are cracked in preparation for consumption.

An egg’s shell and membranes under the shell provide a barrier that limits the ability of organisms to enter. A natural protective coating, called the cuticle, helps to preserve freshness and prevent microbial contamination of the egg. This coating is damaged or removed by processing, but a thin layer of oil may be applied during processing to help preserve internal quality. The eggs are then placed in cold storage and shipped.

Jones studied the functionality of the eggs during 10 weeks of storage. Eggs are found in a wide range of foods, including baked goods and mayonnaise. Over time, eggs can lose their ability to fluff up an angel food cake or make creamy mayonnaise, but according to Jones, they didn’t show a marked decrease in quality during the 10-week test period.

Read more about the research in the June issue of Agricultural Research magazine, available on the World Wide Web at: http://www.ars.usda.gov/is/AR/archive/jun04/egg0604.htm

ARS is the U.S. Department of Agriculture’s chief scientific research agency.