

Story by Jolaine Collins
Photos by Matt Salvo and Richard Green

THE FOOD OF THE FUTURE?

Demand for freeze-dried options is heating up

For 45 years, Bob Henley's camping adventures have led him through the backcountry of the Western United States and Canada, sometimes on skis.

Among the things the El Dorado County resident learned on his trips was to choose food with the nutritional value to sustain him for the journey, without weighing down his pack.

"It's important to feed yourself properly on the trail, but every ounce counts," he said.

Through the years, Henley tried dehydrated, packaged foods and instant foods such as rice with flavor packs. He used a home food dehydrator for fruit. And he recalls hassling with the pots, extra fuel and clunky cook stoves needed to simmer ingredients.

So when freeze-dried foods began appearing in camping stores, he was impressed that they provided a simple way to get nutrition.

"You rehydrate the food by pouring hot or cold water into the bag. There are no pots or

cleanup because you can eat the food right from the package," Henley said.

Besides being lightweight and portable, freeze-dried fruits and vegetables retain their natural flavor, shape and nutrients. With a

surprisingly wide range of choices—from gourmet, such as pesto salmon with pasta, to comfort foods such as lasagna and cheesecake—freeze-dried foods have become a popular choice among campers and backpackers.

But they're not just for outdoor enthusiasts. In grocery stores, more shelf space is being devoted to colorful pouches of freeze-dried fruits and vegetables, as health-conscious shoppers seek nutritious, flavorful choices in convenience foods. The crunchy texture of freeze-dried

fruit makes it a tasty option for adding to cereal, sprinkling on yogurt or eating out of the bag, and candy manufacturers use the fruit to add layers of flavor and texture to chocolate bars.



Bob Henley, above, enjoys a snack of freeze-dried strawberries on the trail. A longtime outdoor enthusiast, Henley says the widespread availability of freeze-dried meals revolutionized his backcountry dining experience. Today, freeze-dried foods, such as the fruit shown by Erika Soto of Mercer Foods, left, are becoming increasingly popular for everyday snacking as well.



It takes **10 pounds** of frozen strawberries to produce **1 pound** of freeze-dried berries.



Frozen strawberries tumble into a slicer, above, at the Modesto facility of Mercer Foods. Mercer employees spread the sliced berries on trays to prepare them for freeze-drying, below. Foods are then stored at minus 15 degrees Fahrenheit until they are ready to go into the dryer.



Freeze-drying removes up to 98 percent of water content.



Freeze-drying also preserves the nutrients and helpful bacteria in dairy foods. The cheese tastes like fresh cheese, and freeze-dried yogurt can be eaten in its crunchy, freeze-dried state as a no-fuss snack.

Freeze-dried foods can also last for years when sealed in their original packaging, which makes them viable options for emergency food supplies.

Age-old science, with a twist

Freeze-dried foods are not a new invention. The Incas preserved potatoes and beef by first freezing the foods on stone platforms at high elevations, then leaving them to dry in the sun. Freeze-dried food followed soldiers to the front in World War II and went to the moon in the 1960s, tucked into the cramped quarters of Apollo spacecraft.

In the last decade, an increasing array of freeze-dried offerings that are tastier and better-looking than their early NASA predecessors have made their way to market in everyday items including cereals and nutrition bars, boosting popularity among consumers.

A wide range of applications for freeze-dried foods, as well as the development of sophisticated technologies to make them, also have spurred market growth.

Mercer Foods of Modesto, the only commercial freeze-dried foods producer in California, is one of the national leaders in the growing trend.

Mercer Foods was founded in 1980 by food scientist Jim Mercer, who helped develop freeze-dried coffee and holds 47 patents in food technology. Mercer's family members still operate the company, which produces freeze-dried fruits, vegetables and pet snacks for retailers and other food manufacturers using solar energy generated from the company's own 1-megawatt solar field.

CEO David Noland, son-in-law of the late Jim Mercer, said the secret to the

method's success involves transforming ice in the food directly into vapor, without it ever turning to water (similar to the properties of dry ice). The product is not heated, which also helps it retain its flavor and texture.

Mercer Foods begins with individually quick-frozen foods that are spread out on trays, then freeze-dried in a vacuum chamber, converting the solid water (ice) directly into vapor, Noland said. The vapor is pumped out of the chamber, resulting in a dried product that is then sealed in moisture-proof packaging. The process may take hours or days, depending on the food.

Mercer Foods' freeze-drying method removes more than 95 percent of water from food, which makes the food lightweight and extends its shelf life, Noland explained.

"The food's color, shape and flavors are left intact," he added. "The healthy bonus is that freeze-dried foods retain a high percentage of their original taste and nutrition, without adding sugar, sulfur or preservatives."

Noland estimated the market for freeze-dried fruits, vegetables and pet treats (a small but growing category within the larger natural pet food industry) at \$350 million for 2016. This total is in addition to the growing markets for freeze-dried coffee, emergency foods, military rations and pharmaceuticals, he said.

A sweet partnership

Mercer Foods buys its produce from Central Valley farmers and other locations around the world. The company's California-grown crops include strawberries, citrus and stone fruits, and vegetables such as broccoli and cauliflower. Peak drying season comes in late summer, when many of California's fruits and vegetables reach the height of ripeness.

Freeze-drying allows fruit such as strawberries to be picked when they're




Freeze-dried foods have a long shelf life—some up to 25 years.

David Noland, left, is CEO of Mercer Foods, which partners with several neighboring California farmers to quickly preserve foods harvested at the peak of ripeness. Mercer's freeze-drying machines, below, use a vacuum chamber to coax ice in frozen foods directly into vapor.

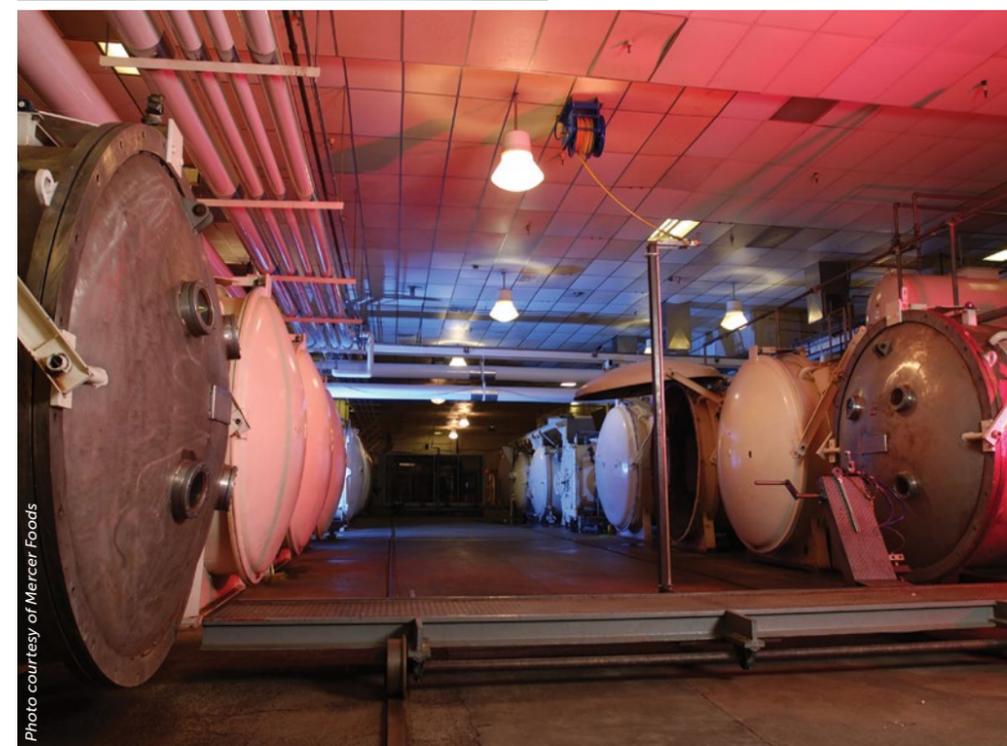


Photo courtesy of Mercer Foods

Breakfast cereal with freeze-dried berries, right, is just one of the many products featuring foods preserved this way. Thanks to modern techniques and an increased interest in healthy eating, the demand for freeze-dried foods has grown. They're sold as healthy snack options, in nutrition bars and even in pet foods.





Glenn Noma, above, is a manager for Tanimura & Antle, a farm that grows strawberries for Mercer Foods. Farm employees load freshly harvested berries to be transported, left. Strawberries destined for Mercer Foods' freeze-dryers will first head to a processor to be individually quick-frozen.

ripe, locks in vitamins A and C, and preserves the fruit until a food manufacturer needs it or a consumer chooses to eat it, Noland said.

Tanimura & Antle is one of the farms that provides strawberries to Mercer Foods. The company grows 160 acres of strawberries in the Salinas and Castroville areas. Although the majority of Tanimura & Antle's strawberries are grown for the fresh market, approximately 10 percent of the grower's annual harvest—about 1.5 million pounds—is used to make juice or frozen products.

Cal Pacific Specialty Foods, one of the largest strawberry processors in the state, turns Tanimura & Antle's berries into individually quick-frozen strawberries that Mercer Foods uses to make freeze-dried strawberries. By the end of the process, 10 pounds of frozen strawberries are reduced to 1 pound of freeze-dried fruit.

"The many, diverse uses for processed strawberries have escalated demand in the frozen market," said Glenn Noma, consulting manager for Tanimura & Antle of Salinas.

In fact, the California Strawberry Commission reported the state's farmers grew 1.7 billion pounds of strawberries for the fresh market in 2015. In addition, approximately 471 million pounds went to the frozen strawberry market, representing more than a 5 percent increase over 2014.

Freeze-dried foods are only getting hotter, and more than 50 years after the first Apollo astronaut's freeze-dried meal, the options still are out of this world. 

Jolaine Collins
info@californiabountiful.com

 Studies cited by the American Institute for Cancer Research show that freeze-dried fruits contain almost as many antioxidants as fresh versions.

