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## Snap, Crackle, Crunch: For this team of food visionaries, insects are the key to feeding the world

Susan Abram

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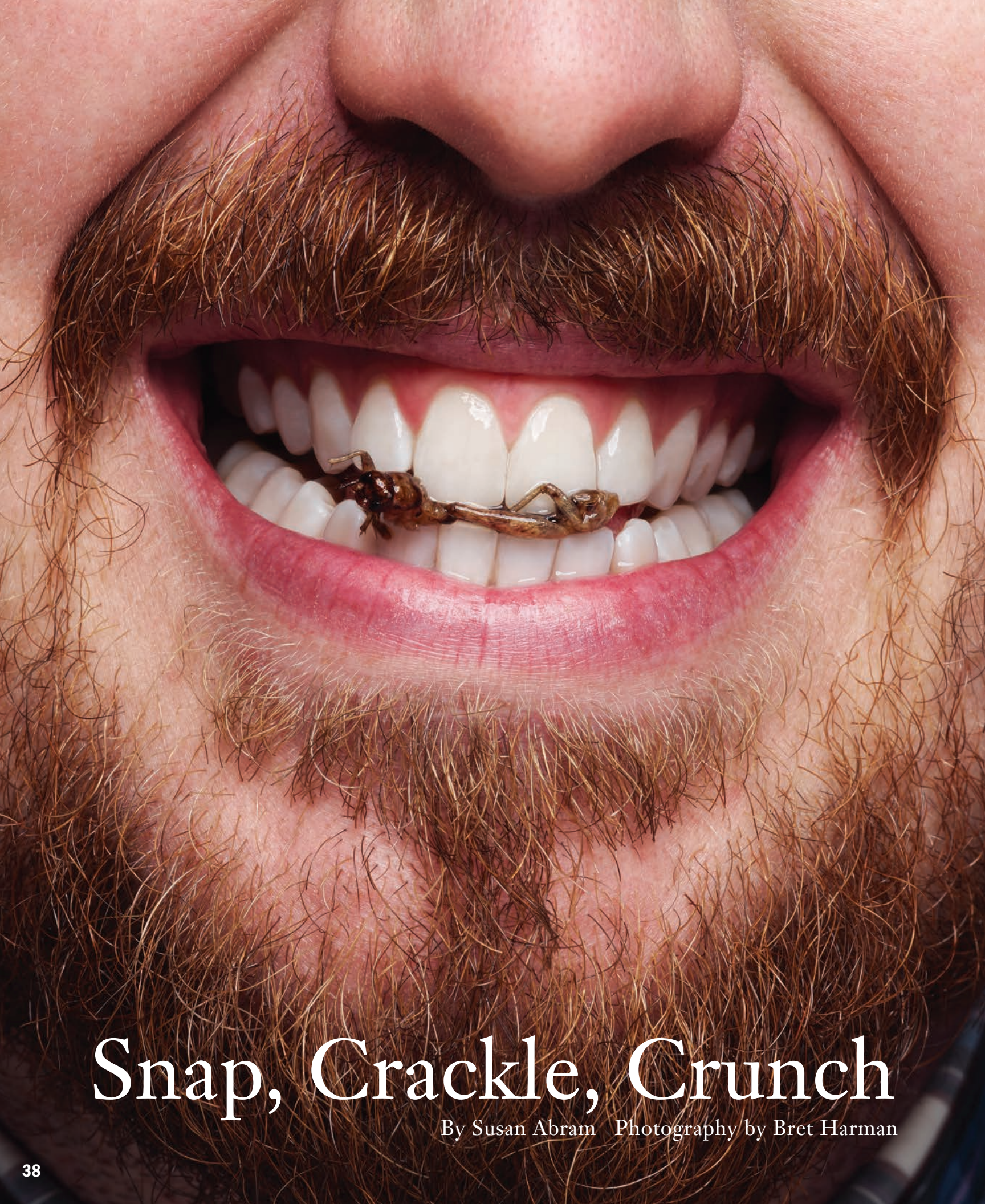
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# Snap, Crackle, Crunch

By Susan Abram Photography by Bret Harman



# For this team of food visionaries, insects are key to feeding the world

For most people, a cricket's chirp is the song of summer. But for a multidisciplinary team of Colby alumni, the uninhibited chorus that comes from the insects marks a leap toward the future of sustainable food systems.

The process starts in a warehouse 20 miles north of downtown Los Angeles, where thousands of crickets are raised for human consumption. "We wanted to develop a sustainable source of protein, and crickets seemed like the perfect way to do so," said Peter Markoe '13. "Over two billion people worldwide include insects in their diets, and we want Westerners to realize the nutritional and environmental benefits of doing so."

Markoe and Elliot Mermel '12, both 27, founded Coalo Valley Farms almost two years ago with a goal to become part of the emerging edible insect market. Along with Lucas Haralson '14 and Sophie Hamblett '14, the team migrated west to develop ways to cultivate the resources in the community around them. "We believe in the power of farming and the power of the cricket," says the farm's official brochure. Coalo, a Latin word, means to feed and nourish together.

The alumni share a vision of helping to solve one of the most serious problems facing the world: how to feed and nourish growing populations with increasingly limited resources. To tackle the problem, they brought liberal-arts strengths to the cricket-growing operation. Markoe was an English major; Mermel devised an independent major—healthcare economics; Hamblett brought her studies in psychology and art to the team, while Haralson brings in biology.

None of the members of the group studied entomology at Colby, although Haralson, the biology major, went on to do research on turtles, toads, bats, and dung beetles. But through their Colby-honed belief in the importance of sustainability, their respective skills, and indefatigable persistence, every inch of the warehouse is being used to develop better techniques to use less water and land while producing a new protein source.

They opened their business inside a 7,000-square-foot building in the San Fernando Valley, north of

Los Angeles, widely known as one of America's largest suburbs (and the birthplace of the Valley girl). It may sound like an unlikely area to start what is believed to be the first urban cricket farm for edible consumption in California.

But as Markoe and Mermel learned, insects, like humans, enjoy the warm climate. A large part of the warehouse space is used to cultivate and process food-grade crickets for sale to consumers, restaurants, and food manufacturing companies.

Mermel said he stumbled on the idea of opening a cricket farm when a friend was working on a graphic arts project for protein bars that included cricket powder. Though Mermel had no background in farming, he took notice when he learned that raising crickets is 100 times more water efficient than raising beef. In a world where water and other resources are increasingly scarce, this is more than a cricket factoid.

Edible insects are considered to be an overlooked protein source, according to a recent report from the Food and Agriculture Organization of the United Nations. The organization found that by 2050, insects will need to become part of the food supply to sustain a worldwide growth in population. "Scarcities of agricultural land, water, forest, fishery, and biodiversity resources, as well as nutrients and non-renewable energy are foreseen," according to researchers of the report. And insects have a high conversion rate of resources to protein.

Crickets need 12 times less feed than cattle, four times less than sheep, and half as much feed as pigs and broiler chickens to produce the same amount of protein, according to the FAO report. "Besides, they emit less greenhouse gases and ammonia than conventional livestock. Insects can be grown on organic waste."

Word is spreading. The demand for cricket powder, for example, has been great, Mermel said. The ground insects are increasingly becoming an ingredient for everything from protein bars and smoothies to pizza crust and pancakes.







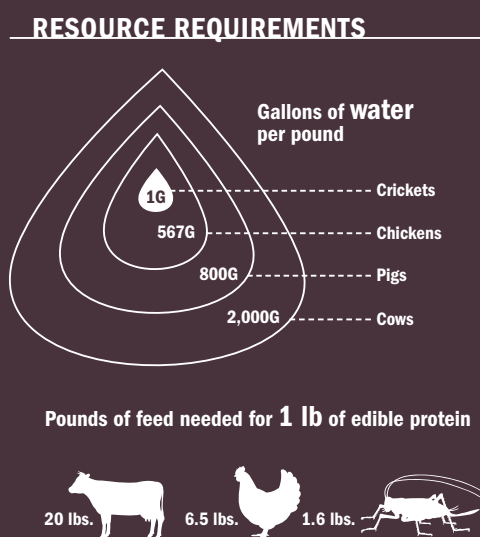
While Westerners still are somewhat squeamish at the thought of eating insects, some of the best-known Oaxacan restaurants in Los Angeles already serve *chapulines* or grasshoppers in their dishes, for example.

Cricket farms in the United States are not new. Armstrong Crickets opened in 1947 and was the first in the nation to supply pet stores and bait shops. But the first edible cricket farm opened in Ohio in 2014, and more have followed.

Since then, the team has improved how it feeds and raises the insects. That includes growing sprouts in an in-house aquaponics unit, which involves using the waste from live fish to fertilize plants. The plants are then fed to the crickets. “It’s so simple,” Mermel said. “If all of farming were being done through aquaponics, there would be no land shortage and less water used.”

The burgers were available for a few weeks and the response was positive. At least 30 customers made the leap in the first week. Grain Lab chef Flavi Mancera used the dry roasted whole body crickets—sans legs—in a patty made of quinoa and topped it with a horseradish aioli.

All of that product takes a lot of crickets. Roughly 8,000 of the insects are needed to make a pound of powder. Crickets takes two months to reach maturity. The insects like moist, warm weather, are omnivorous, and eat decaying plant material, fungi, and some seedling plants. At Coalo Valley Farms, the crickets are raised in hundreds of open modified bins and fed fresh sprouts. Females live longer than males. Harvesting involves a freezing method, to slowly get the crickets’ heart rates down.



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—Peter Markoe '13, co-owner and founder of Coalo Valley Farms

They also continue to develop their business by working on products appealing to the American palate. They’ve started making dark-chocolate-covered crickets and are experimenting with other flavors. The dry-roasted crickets have a nutty taste and are crisp, like Rice Krispies.

And yes, crickets are being consumed. The company reached a milestone this year when a local restaurant, Grain Lab Deli & Kitchen in Burbank, contacted Coalo Valley Farms to help create and serve cricket burgers. Grain Lab owner Tim Kang said he read about Coalo and wanted to see if customers were ready to try a burger that wasn’t quite vegetarian but still high in protein. “I thought people would say, ‘Eeew,’” Kang said. “Instead, a lot of customers see it on the menu and say, ‘Hey, that’s a good idea, but I’m not ready to try it yet.’”

“We like to say they have lived a full life,” Markoe said. “They’ve reproduced. They have had healthy diets. We harvest them humanely.”

There’s been much trial and error, from learning the best temperatures to breed the crickets to figuring out how to keep them from hopping out of their homes. “We used to have more escapes, but we figured it out,” Markoe said of using slippery tape along the rims of the bins. “Our crickets are pretty resilient. We use a different species.”

At Coalo Valley Farms, the team also is working on raising meal worms, which are just as rich in protein. “They also don’t hop,” Mermel said. “That’s the biggest benefit.” ©

*The Colby alumni at Coalo Valley Farms and their products: clockwise from top left, chocolate-covered crickets, Peter Markoe '13, cricket flour, Sophie Hamblett '14, a cricket burger, Elliot Mermel '12, cricket jerky, and Lucas Haralson '14.*