

Insects: 2.5 billion people eat bugs as part of their daily diet

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Sweet and Spicy Ginger and Honey Cinnamon. She buys her crickets from a supplier in Canada.

When she is not working at her full-time job as a baker, Newcomb is in the kitchen or at farmers markets selling her product and educating consumers about the benefits of entomophagy — eating insects.

Proponents say the insect protein industry is on the cusp of a financial boom. They project it will be worth almost \$8 billion by 2030, according to a report by analysts at Barclays bank.

It also helps that big-name investors are getting involved.

“I dig it,” actor Robert Downey Jr. said on the website of the Footprint Coalition, his venture capital firm. The company has invested \$224 million in Ynsect, a French company that produces mealworm protein as an alternative to fishmeal and fish oil. It is used in human food, animal feed and plant fertilizer.

Proponents also say there is more to the insect industry than just food and feed. The Food and Agriculture Organization of the United Nations said that insect farming could also provide more employment opportunities in rural areas.

For those in the West, ordering a salad topped with grasshoppers may represent the edge of the envelope for even the most adventurous diner, but 2.5 billion people in more than 130 countries eat bugs as part of their daily diet. According to the U.N., 1,900 varieties of insects are edible.

Insects are also superfoods. They are high in protein, fats and vitamins. For instance, crickets have twice as much protein per pound as beef. Similarly, mealworms contain up to 60% protein, and black soldier fly larvae have 50% crude protein.

Future of farming

Although some consumers may not exactly hop at the chance to eat a pizza whose crust was made with cricket flour the next time they order take-out, another solution is to feed insects to the animals that feed us.

A couple of hundred miles west of Newcomb's kitchen, in an old Tree Top juice factory, rows of stacked trays house mealworm eggs that will soon produce protein-rich feed for animals.

Beta Hatch is the brainchild of Virginia Emery, an entomologist and entrepreneur who started the company as a backyard experiment. The company sees insects as a sustainable protein that will help feed the world.

Beta Hatch's mealworms grow into beetles during their lifecycle. The eggs they produce hatch into mealworms, which in turn are a food source for livestock, poultry and fish across the nation.



Joanna Newcomb started Chomper Cricket Foods two years ago. The business sells crickets seasoned with spices and other ingredients.



Insects are increasing used as a source of protein and other minerals for people, poultry and livestock.



Joanna Newcomb, owner of Chomper Cricket Foods, fills pouches with spoonfuls of seasoned crickets.

The nutrition in mealworms is essentially equivalent to other feed that goes to livestock and poultry, said Aimee Rudolph, Beta Hatch's business model vice president.

“Mealworms have a complete amino acid profile, so they can offer complete nutrition to aquaculture, poultry and swine,” she said.

Halfway around the globe, almost 9,000 miles from Washington state, people of all ages sift through Kenyan fields at night, carrying burlap sacks they fill with giant, sleeping locusts.

They work for the Bug Picture, which was founded by Laura Stanford.

First, a little background. In 2020, Kenya had its worst locust infestation in almost 70 years. They were

everywhere, blanketing the countryside and eating the vegetation. Instead of letting the locust swarm take over, Stanford led a team to take advantage of it.

“We wanted to create something a bit more innovative because essentially locusts are just a sky full of protein,” she told Capital Press during a Zoom call over the internet.

The Bug Picture works with communities in Kenya to collect locusts, and then grinds them into protein-rich feed for poultry and livestock and fertilizer for farms.

“What we've sort of seen is that there is a lot of opportunity to use insects in a creative way to rethink some of the traditional agricultural approaches,” Stanford said.

Closing the ‘food loop’

Experts say insects have a closed-loop system. This is because they consume food waste and turn it into high-protein feed and fertilizer.

Jeff Tomberlin, a professor at Texas A&M University, said that the black soldier fly can be fed something that typically has no value to humans. They can live entirely off animal and food waste.

“This is the only insect that really can be fed something that is not in competition with humanity,” said Tomberlin. “What I mean by that is, you're not feeding this insect soy, or some other agricultural product that could be straightforwardly consumed by livestock or by people.”

According to the FAO,



Liselott Lindstrom/The Bug Picture
Black soldier fly larvae are used as an alternative protein source for animal feed.

larvae are kind of neat, because they also have a ton of calcium and protein in them ... so you're kind of getting like a one-two punch,” she said. “Protein and calcium are both super important for chickens. They need the protein to be healthy but also the calcium for strong egg shells, and the calcium provides the contractions that actually ... help them lay the eggs.”

She also believes the grubs may make her chickens eat less feed because they are satisfied with the nutrients and vitamins packed in the insects.

“Corn is in a lot of chicken treats and that's just a filler; there's not a lot of nutrition in that. So the chickens actually, by eating the grubs, I would guess they're eating less feed because they're getting a lot of what they need from those grubs,” she said.



Liselott Lindstrom/The Bug Picture
A Bug Picture worker feeds chickens meal made from ground-up locusts.

an estimated 1.3 billion tons of biowaste could be converted into protein by insects yearly. Even their poop — called frass — is a high-quality fertilizer.

Better buck for the bug

Because insect protein that is used to feed livestock is relatively new to the West, it is produced on a much smaller scale compared to other animal feed. Because of that, Rudolph of Beta Hatch said it is currently difficult to compete with other feeds on price.

“Cost is a huge challenge because while we know this is something that needs to happen in order to fix the food system, today, when we're operating at these very small scales, it's very hard to compete on price with things like soy meal, and even fish meal,” she said.

But some experts predict insect protein could be cost-competitive with other feed options within a few years as investments and demand continue to grow.

Chicken feed

Under a blanket of sunbeams, Lisa Steele, a fifth-generation chicken farmer in Maine, kneels amid her flock. Her chickens gently peck at her open-palmed hand, which holds black soldier fly larvae.

Steele has been feeding her chickens insect grubs as a snack for a few years, and likes the benefits they offer.

“The black soldier fly

Buzz kills

Besides its current lack of efficiency, another buzz kill that hinders the insect industry is the stigma of eating insects — for humans and animal feed. The Food and Drug Administration even labels insects as “filth.”

Newcomb, of Chomper Cricket Foods, said insect snacks often fall in the “novelty” sector and are sold in gag shops, where they are purchased as gifts for unsuspecting friends.

“If they see it as a novelty, it's going to be harder for it to be a profitable business rather than habitual,” she said, pointing toward survival shows such as “Fear Factor,” in which contestants eat insects as a challenge. Her long-term goal is to see insects become a regular item in health-food stores.

In the sweltering heat of a Pacific Northwest evening, Newcomb greets a visitor who approaches her at a farmers market. Near her, a blue sign propped on the table reads, “Eat Bugs!”

“So many people have this apocalypse mindset with insects. They're like, ‘Well, I'll eat it when the world is ending’ or, ‘I'll eat it when all of our other food is gone,’ Newcomb told Capital Press. “And it's like, well, the world might not end if we eat more insects.”

Hay: #TimberUnity is vetting producers to make sure hay gets to those who need it

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Simon, who grows hay and grain, said the basin is experiencing a crisis after the U.S. Bureau of Reclamation announced in May it would allocate zero water for the Klamath Project. The allocation normally irrigates approximately 200,000 acres of farmland.

Without water for their pastures, Simon said ranchers are struggling to feed their animals and, in some cases, are selling off entire herds to survive.

“They're using up their quota of hay for the winter,” Simon said. “If they had water for their pastures, we wouldn't be in this situation right now.”

As a member of the Tulelake Irrigation District, Simon said he has some access to district



Football players from Lost River Junior/Senior High School helped unload hay donated by members of TimberUnity from all over the state.

wells, allowing him to grow a portion of his normal crop. Others, he said, aren't so lucky.

#TimberUnity is vetting producers in the area to make sure the hay gets to those who most need it,

Simon said.

This is the second convoy to travel to the basin — the first, which arrived

July 24, brought nearly 200 tons of feed.

Since then, Webb said donations have continued to pour in from all over the state, prompting the second convoy.

“Just the generosity of what we call the #TimberUnity family,” Webb said, “it never ceases to amaze me how much they give.”

Along with hay for ranchers, Webb said #TimberUnity began collecting donations for victims of the Bootleg Fire on July 24. The group distributed 78 Blue Barrels in 40 communities, where people could drop off things like camping equipment, rubber boots, generators and batteries.

Webb said they have teamed up with Cascade Relief Team to collect the barrels and bring donations to the Bly Fire Department,

where a resource center was established for victims.

One family even donated an RV, which Webb said will be given away to a young couple that lost their home in the blaze.

Over the last two years, #TimberUnity has spearheaded multiple donation events to assist rural communities reeling from natural disasters.

In February, the organization also collected loads of firewood for homes that lost power during winter storms that dumped snow and ice over parts of the Northwest.

“It's just a little group of people who are out saving the state all the time,” Webb said with a chuckle. “The donations just come pouring in, whether it's materials or people giving us money or hauling hay. It never stops.”