

Crunch Time: Insects Are Not Going to Save Us

Published 30 September 2024, with Dustin Crummett.

Article after article informs us that eating insects will save the planet, banish hunger, and protect the rainforests. Dustin Crummett, executive director of the Insect Institute, begs to differ. He points out that most of the food being fed to insects isn't even waste.

Dustin: So it's true that in theory, they can eat food waste, and there are, you know, small scale pilot farms where people feed them food, waste, that sort of thing. So I agree with that. It turns out, though, that when you're talking about large scale industrialized insect farming, the farms that are producing almost all of the output of this industry, they actually rely very, very heavily on things besides food waste. In some cases, they use at least some amount of ordinary commercial feed, just compound chicken feed that's made of soy. In many cases, they also rely heavily on agricultural co-products like, say, wheat bran, corn starch, spent grain from distilleries, things that maybe they're technically byproducts because they're not what you're making, but they are themselves feed grade and commonly are fed directly to other farmed animals. You know, in some cases can even be eaten directly by humans. And so these are not waste products. These are feed grade materials with market value.

So why is it that the large companies are not using large amounts of food waste, but instead relying on these other ingredients? What we argue in our paper is that there are kind of a suite of reasons. One issue that's been cited by some big industry sources, including the CFO of Innovafeed, which is the largest company, is variability in at least many sources of food waste. If you think about, say, ordinary household food waste, it's not a homogenous product. It's likely going to be nutritionally inferior for the insects than something like commercial chicken feed. But it also ... Even if the insects survive, what you feed them determines their nutritional content, right? So if you're trying to make a consistent product, you've made a deal with

Skretting that you're going to sell them, you know, 30,000 tons of fishmeal every month or whatever, they need to know that you're going to have that amount every month, and they need to know the exact nutritional content. They need to know that it's the exact same thing that they're going to be putting into their fishmeal every time, into their fish feed, every time. And if you're feeding the insects something that is not homogenous, that varies in its nutritional quality, then your output, your feed, is also going to vary in its nutritional quality. So that causes a big problem.

Jeremy: So basically waste is just not a good input stream to put through insects.

Dustin: That's right. Yeah. I mean, obviously companies would like to use cheaper waste streams but they haven't been able to make it work in practice.

Jeremy: Yeah. Do you think — and this is something of a tangent — but people have worm compost bins on their balconies and in their gardens. Is there a possibility — we've been talking about industrial — but is there a possibility for domestic insect use, or do they take too much processing to turn them into human food?

Dustin: The industry has been moving towards ... yeah ... So, I mean, this is another issue. Waste is often quite decentralized and where it's highly concentrated, often it's already being used for other purposes, like biogas gas production. So one model that people have discussed is, could you have decentralized insect farms? That's very much also not the direction in which the industry is going. You're right. You need often quite intensive processing. You also need, for many species if you're ... especially if you're doing this in the global North, you need ... I mean, black soldier flies originated in the tropics, so you need often quite expensive facilities that are heated or climate controlled et cetera, so that they can continue growing and thriving throughout the winter. You could probably have some small scale decentralized insect production that opportunistically makes use of local waste streams. It's not likely to, I don't think it's going to be able to achieve the the kind of output that the big industrialized, centralized farms can. And so it's not the direction in which the industry is going.

Jeremy: It's also presumably not going to be the major replacement for meat that it's often cracked up to be in terms of climate change.

Dustin: Yeah, you're definitely correct about that. So the public perception is that the aim of the industry is to get people to eat insects as a replacement for meat. Now, of course, it is true that if people ate, say, insects instead of beef or instead of chicken or whatever, if people ate insects instead of conventional meat, that would be more environmentally friendly. However, insects are not uniquely environmentally friendly, right? Almost all food is better for the environment than conventional meat. And insects are resource intensive in some ways. If you're feeding them feed grade materials, then you have feed conversion ratio losses, et cetera. So the issue is not finding something that is more environmentally friendly than meat. The issue is finding something that people will eat instead of meat.

And insects, consumers, at least in Europe and North America, do not want to eat insects at all. Only a tiny, tiny fraction of the industry is dedicated to producing insects for human consumption. And because of consumer acceptance issues, they tend to ... People especially don't want to just eat a whole insect, right? And so such insects as are sold for human consumption often are basically obliterated and incorporated into other products so that you don't have to think about the fact that you're eating an insect. So they go into chips or pasta or protein powder or whatever. And the thing is that we already have plant-based versions of those things, and those products would have lower environmental impacts if you didn't have the insects. Yeah. So really what the industry is doing is producing feed for other animals.

Jeremy: Yeah. I've got in my hand a book that I've had since, gosh, about 1970, called *Why Not Eat Insects?* I'm sure you know it, by Vincent Holt, originally published in 1885. And as far as I can tell, it has never had any real impact on anybody in what you called the global North. Clearly that's kind of not the market. I mean, it may be what's in some of the hype, but it's clearly not the market, as you say. It's animal feed. And the good thing about animals is they don't have to want to eat insects. They'll just eat the insects. So is that a good use for insects then?

Dustin: It's at least much more mixed. One of the big issues with using them as animal feed is that if you're feeding them feed grade materials, which, as I say, the big companies are, and for a variety of reasons, they're likely to continue doing so. If you're feeding them feed

grade materials, it would actually be more efficient economically and environmentally to just feed the feed grade materials to the farmed animals.

Jeremy: Sure.

Dustin: You're also, again, you have other inputs in the process. So processing the insects, slaughtering them and drying them takes energy. Maintaining temperatures in the building takes energy. The building itself is often quite expensive and resource intensive. It's mixed. But if like sort of the bottom line takeaway is, no, it turns out that in practice feeding insects to other animals, probably not a good idea because it would be better economically and environmentally to just feed the stuff you're feeding them directly to the other animals.

Jeremy: I don't know if you remember the mad cow disease outbreak in in the UK, which was basically about feeding animals things that they're not used to eating, Is there ... have you come across any possibility that feeding insects or insect material to pets or to livestock carries disease risks?

Dustin: It does. It depends a lot on what the insects are fed and also on other quality control measures. So this is another big problem with feeding them waste products. Insects can serve ... If there's any sort of contaminant in what they're fed, they can serve as a vector for diseases, they can bioaccumulate certain other toxins, heavy metals, et cetera. And so regulations in Europe are quite strict about what they can be fed and the industry, because of the the mad cow disease issue, for instance, you're not allowed to feed them food waste that might contain meat; and the industry wants to remove that. And so far, they haven't convinced the public health agencies that that's safe. There is also a bit of a worry about ... They do have disease outbreaks on the insect farms all the time because, you know, for the same reason you do in other forms of intensive animal agriculture, right? You have a huge number of animals in close confinement. The diseases that the insects get cannot be spread, usually, to humans, fortunately. But there is a concern if you have escapes of insects from farms, which there actually is some recent gene sequencing data that suggests that that's happening, or if you have improper disposal of diseased insects, then there is a risk that you might spread diseases to wild insects.

Jeremy: Right. So I mean, overall, despite all the hype — and I've seen a lot of it — you seem to be painting a pretty pessimistic

picture. And I understand that some of the bigger companies have already gone bankrupt. Is this a bubble that's going to burst?

Dustin: Yeah. It's always hard to say, but there definitely was a huge amount of hype around it, you know, five years ago or whatever. A lot of these big companies expanded, a lot built big facilities, and now it turns out that they're having a lot of trouble being profitable. I think sentiment is that ... You know, investors want to see evidence that these companies can actually make money before they they put more money into it. Agriprotein, which was one of the largest companies and had gotten well over \$100 million in investment, went bankrupt. Beta Hatch, which was near me in Washington, went bankrupt last year, I think. So yeah, they are struggling and, you know, they're trying to rework their business models and whatever so that they can be more profitable and we'll see what happens.

Jeremy: You focused in your paper and elsewhere about the the unsustainability of using food waste. But you do also acknowledge that the public needs to accept the idea and actually eat insects if it's to make any difference. So do you think there is any prospect for people in developed economies to do that.

Dustin: I would expect that it will be about what it is now where some people ...

Jeremy: Right now it's a rounding error.

Dustin: Right. I think some people who are risk taking, high openness to experience will eat an insect to see what it's like. Right? Or they'll try cricket pasta once or something like that. I don't think that people will incorporate it as a staple in their diets. And in fact, if you go to industry events or you go to to big academic conferences like Insecta in Germany, that's roughly the pattern you see. There are companies that have booths set up where they ... Oh, you can sample a cricket cookie or whatever. But then at the meals, the food is just, you know, beef and a plant-based vegan option.

Jeremy: That's really interesting, actually.

Dustin: Yeah. So, I was in a room, a Royal Entomological Society meeting about insects, specifically about insects as food and feed. And someone near the end of the meeting asked, you know, do people here eat insects regularly? And there was one — probably 60 or 80

people in this room — one person said that they ate them twice a week. And no one else even got up to twice a week. Most people, you know, even though many of them worked at companies that were producing insects, they didn't eat insects. And honestly, there's probably not a lot of cognitive dissonance in that because they know that their company is not really making food for humans. They're a feed company.

Jeremy: Just going into a little bit of background. You've talked about sustainability, we've talked about sustainability and waste. But I noticed that the organization that you're directing, the Insect Institute, it's funded by Effective Altruism. And I just wonder, what's this got to do with effective altruism?

Dustin: Effective altruists have been interested in questions about alternative proteins and food system transformation for a long time. And if you think of insects as sort of a candidate contributor to that, the interest makes more sense. EAs often have concerns about the current food system because of its impact on the environment, on human development, on biosecurity risks. A lot of EAs are concerned about the long term future. So they want a food system that can withstand potential catastrophic shocks. And of course, there are also animal welfare concerns with current animal agriculture. And some people worry that those may essentially kind of reoccur in the context of insect farming.

Jeremy: For insects? Really?

Dustin: Yeah, I know that it sounds weird, right? Yeah. But there is ... I mean ... So, in the UK, lobsters and crabs and things are now recognised as sentient. And the evidence of sentience in, say, adult black soldier flies is probably as good as or better than the evidence of sentience in lobsters and crabs. And, I mean, if insect farming really takes off, then they will be farming ... almost all of the farmed animals in the world will be farmed insects. Right? And at the same time, this seems like a really weird issue, which I get. So, you know, I do think probably at some point there will need to be some sort of animal welfare regulations around insect farming as well. And that's also something that we're interested in.

Jeremy: Very, very interesting. So at the moment it's about waste and sustainability, but the end game may be some kind of, I don't want to say ban, but making it very difficult.

Dustin: Uh, well, I mean, on the welfare front, I would say what's needed are, you know ... Other forms of animal agriculture have had to introduce at least minimal welfare standards. Right? And they still have plenty of problems, certainly. But insect farming at this point has not really even introduced minimal welfare standards. Some companies have some welfare-oriented policies, but in terms of concrete, species specific, scientifically informed welfare standards, Not a whole lot of that. And so I think ... I'm not talking about a ban, but I mean at some point there will probably need to be ... Even if you set aside the ethics, just as a practical matter, to maintain consumer confidence, to maintain the social license to operate with other stakeholders, policymakers, et cetera, et cetera, there will have to be something done on the welfare front. And I think that's something that a lot of people in industry are kind of bracing for and getting ready for.

Jeremy: But of course, maintaining consumer confidence is really only important if consumers are consuming them.

Dustin: Right. Well, it's also, I think, it's ... One big market for them, at least right now is pet food. People do worry a little bit more, or at least some some of the consumer survey data suggests people do worry a little bit more about ethical production in pet food. If you buy a fish at the supermarket, yeah, you're probably not thinking about what it was fed. But what you're going to feed your animal, there's more concern among consumers about welfare on that front. And pet food is very important for the industry right now because the farmed animal feed is not profitable for them at the moment because the product is too expensive and farmed animal feed is a very, very price driven market. But pet food, if you're selling premium pet food, or look, here's our environmentally sustainable, hypoallergenic et cetera, et cetera, food for your dog or whatever. You can sell that at a premium. So there's interest in trying to appeal to the kind of premium pet food market.

Transcripts are possible thanks to the generosity of Eat This Podcast supporters. If you find the transcript useful, please [consider joining them](#).