

36 Insects in the food system: novelty or necessity?.mp3

Matt Eastland [00:00:06] Hi, everybody. I'm Matt Eastland.

Lukxmi Balathasan [00:00:08] And I'm Lukxmi Balathasan. Welcome back to the Food Fight podcast from EIT Food. Europe's leading innovation community working hard to make the food system more sustainable, healthy and trusted.

Matt Eastland [00:00:20] On the podcast menu today, we've got bugs and creepy crawlies in our food. Yes, you heard that right, everybody. So for most people, keeping insects well out of the kitchen is the main aim. But today, our guests are trying to do the complete opposite and introduce insects to solve some of the food system's biggest challenges.

Lukxmi Balathasan [00:00:39] On the podcast today, we have Philipp Egli. He's the co-founder of Crick, a Swiss company producing insect-based foods for human consumption. Their first products include crackers made from crickets. Very intriguing. Welcome to the show, Philipp. I'm really looking forward to hearing all about this.

Philipp Egli [00:00:57] Hi, guys. Nice to be here.

Matt Eastland [00:00:59] Great. Thanks, Philip. And also with us, we have the brilliant Miha Pipan, who is the co-founder of Better Origin, a company using insects as a tool in the production line. So their insect mini farms have been developed to convert local waste from agriculture and industry into high quality animal feed, essentially helping farmers to produce more with less. Welcome to the show Miha.

Miha Pipan [00:01:23] Thank you very much for having me. I'm looking forward to this conversation, guys.

Lukxmi Balathasan [00:01:28] Brilliant.

Matt Eastland [00:01:28] Great for you to be here.

Lukxmi Balathasan [00:01:30] So I think about 15 years ago, there was gift shops starting to selling what people refer to as gross candy, things like curried locust, lollipops with scorpions. My first experience was at a botanical garden where I tried a chocolate-covered cricket. And I must say that cricket was the best part of it. The chocolate not so good. And all in all, so, you know, these products were sort of a gimmick, a novelty item. I guess the fun was all about it being like a Bush Tucker trial. So bringing things up to date today with insects, the food system, and they are still a novelty. Have we got to a point where they're now a necessity. Miha, what do you think?

Miha Pipan [00:02:10] I mean, that's that's a very interesting first experience, I guess, of eating insects. And I must say, mine was very similar. Traditionally we had this element of like, almost like a trial right? Do you dare to try this thing? And the problem with that is you try it once, whether you like it or not. You probably don't go back to it. So it wasn't really an offering in culinary terms or in nutritional terms. But I think that's changed a lot since then and I would say, particularly in the past five, ten years. We've seen a momentous change from, you know, discussing the theory of using insects in Western foods to their being companies now that are focussing on this, much like Philipps. So, yeah, I think it's very exciting that we're heading in this direction. And I'm sure we're going to touch on the different points in this conversation. Why that might be so.

Lukxmi Balathasan [00:03:06] And what about you Philipp? Do you think we're still looking at insects as a novelty or at this stage right now with sustainability, has it become a necessity?

Philipp Egli [00:03:15] I still feel it as a novelty. Many customers we talked to are kind of surprised that you can eat insects, even though it has been legalised three years ago in Switzerland. So it's not really entered the mainstream food chain I would say so far. But on the other hand, yes, it's becoming more and more clear that we need to change the agricultural system. This is a message that has reached the mainstream thanks to greater and the climate youth. And so I think more and more people are asking themselves, how can we eat in a way that, you know, is not destroying the planet and insects is one possible solution. I'm not trying to say it's the only one.

Matt Eastland [00:04:00] Thanks Philipp. I mean, Miha, obviously, Phillipps just touched on quite an important point there about the sustainability and saving the planet. You know, why do you passionately feel that insects are the answer in terms of what you're doing with them?

Miha Pipan [00:04:14] Yeah. I mean, I feel insects are part of the bigger answer because of the science that's backing up this sector so far. So it's not just, you know, something cool and novel and not going to say sexy, sexy, but it's it's got you know, there's meat on this bones, let's put it that way. So insects are undoubtedly more sustainable in terms of protein production alone. If you look at water use, if you look at land use, if you look at the energy requirements. If you go into any kind of advance processing, overall if you compare it to animal sources of protein, which is, you know, in terms of the quality of protein, quite comparable, it is something that makes a lot of sense from the various directions where sustainability is going to affect us. Because, you know, it's not just the missions that's going to be a generalisation, but there's, you know, maybe urban locations or locations where land comes at a premium and there's not even a possibility to grow primary protein, you know, in the traditional way that requires lots of land. Or there might be spaces where water is extremely limited and where, you know, traditional crop or beef protein might not be an opportunity at all. And in those situations, insects can really, really change the game. On top of all that, it's also the fact that many insect species will be able to utilise a various range of biomass inputs to grow this protein and fat and, you know, all the other nutrients present in them. So it is this fundamental technology that allows you to turn waste into nutrient opportunity. And, you know, with an ever changing world of ever more so if we look at the past year, these kind of resilient, sustainable technologies are going to have to play a part in any long term answer.

Matt Eastland [00:06:12] Yeah, that that is a super useful summary. Thanks for that, Miha. Really great way to kick off the show, actually. Philipp, coming back to you. So can we get straight to your products at Crick? So what are you actually trying to do? You know, so talk us through the product itself.

Philipp Egli [00:06:29] So the product what we sell now is a cracker. We call it kaneki, it looks like a large coin. Let's call it that way. It contains seeds and it does contain cricket powder. So that is where the main protein ingredient comes from. And through that channel, it also contains iron, calcium and folic acid. So that is something that we are very happy and proud of that we use as one of the arguments to show to the customer. If you're eating this, you're doing something good for your health, because we believe that the

customer is sort of egoistic to convince them. We feel like we need to come through to their benefits first and then talk about the environment in the second place.

Matt Eastland [00:07:21] Yeah.

Philipp Egli [00:07:21] And that's why we are slogan is it's good for you and it's good for your planet. And so we have these health benefits and then we have these environmental benefits, which Miha has very much summarised. That is kind of our punchline as well. And I guess what we're trying to do in a marketing sense is we're trying to use the protein argument and pitch this to people that are naturally looking for protein, which would be, you know, people doing lots of sports and which have now more and more become aware of this ecological need to transition to some more sustainable protein source. And once we build up the customer base with these protein hungry people, we can use them as sort of an entry to the mass market.

Matt Eastland [00:08:11] Okay. Yeah, that's really useful. So you're kind of going after the kind of the nutritious and the sustainability side, which is super interesting. And just staying with you just for one second, Philipp. So how did you actually...Well, first of all, how did you get into this? Right, I mean, so to go from whatever you were doing before into insects, I imagined for a lot of people that that's quite a jump. So you just sat in the garden just one day thinking, well, I'm going to start eating bugs because I think they're super nutritious or you know what's your what's your story?

Philipp Egli [00:08:39] Where should I start? It could be a really long story.

Matt Eastland [00:08:43] Ahahahah.

Philipp Egli [00:08:43] No, I mean, my training is climate economics. So I'm working in the power market mainly. And the cricket business is something I do on the side together with my wife and a work colleague. And so actually, we were sitting together and talking about, you know, a few years back when when insects were legalised. We were talking about different ways in which a consumer can take action. And we were saying that, you know, we're young people. It's our generation that is now shaping the world. And we want to, you know, play our part. And it was not enough for us to be only a consumer. We thought we also want to be a producer. And so the first thing that we started to do is we tried to start growing insects ourselves. None of us is, you know, biology or insect expert. But we still managed to build an insect growing facility and we did that for about one to two years. And then we realised that's so much work and it's commercially really hard to come to a profit. And so we we switched the strategy and started to focus on the marketing. And what we do now is we import the crickets from Holland, because they actually have 10 years advance or headstart in this field, so they're much more productive and yeah.

Matt Eastland [00:10:16] Amazing. Okay, I'm sorry Miha, I'm staying on this just for a second. So just for the listeners. So you received these crickets and then you processed them into flour, I'm assuming. So how does that actually work? How do you take an insect and turn it into flour?

Philipp Egli [00:10:32] Okay yeah. So there are different kinds of dehydration methods. What we used to do is kind of low tech. We put them in an oven and we cook them at low temperature for quite a long time. And we dried them with heat. There is more advanced techniques like microwaves. And I believe many others, like lyophilisation, I guess is the English word, which is very advanced technology and costly infrastructure. That's

something that we could not afford to have ourselves. So we went the low tech way and we we dried them in a large oven and are insects... The insect powder is kind of low tech. It's something that people have eaten for thousands of years. It's a protein source that is tried and tested and it's all natural. So that is kind of the part of the story that we would tell the people and that the taste, to be honest, is not overwhelming. It's kind of I would say it's a bit boring.

Matt Eastland [00:11:39] Really?

Philipp Egli [00:11:39] I mean, dry insect powder is yeah, it's just boring. It's sixty percent protein. But, you know, you don't eat it because of the taste. You eat it because of the ingredients.

Matt Eastland [00:11:50] Got it.

Matt Eastland [00:11:51] And that's why we put it in the crackers to, you know, the goodness that the tastiness comes from the other ingredients.

Lukxmi Balathasan [00:11:58] And Miha, how have you tried any of these insect crackers, or insect products?

Miha Pipan [00:12:03] Oh, my God. You'd be surprised if you knew what i've eaten.

Lukxmi Balathasan [00:12:06] ahahaha.

Matt Eastland [00:12:06] ahaha.

Miha Pipan [00:12:06] you know I have this logic that if I'm not going to try it and eat it then why on earth should anyone else?

Matt Eastland [00:12:16] That's fair.

Miha Pipan [00:12:16] So I've been living by Bats Gospel and I've been shoving, you know, maggots in various ways into my mouth.

Matt Eastland [00:12:29] ahaha lovely.

Lukxmi Balathasan [00:12:29] Oh.

Philipp Egli [00:12:29] ahahah.

Miha Pipan [00:12:29] But on that note, you know, I can say this processing is definitely one of these magical elements when it comes to turning insects both into more sort of feed commodity type products that are going to go into pet food or whatever, as well as into food. There's quite a lot you can do to influence the texture and the flavour based on what process you go through. And as Phillip started touching on, you know, there's very interesting technologies out there that can allow for really like creamy powders to come out. But it's always kind of like a trade-off between technology costs, then what you're ultimately going for. But I would say, you know, on this kind of flavour front, I definitely think this is somewhere where the industry we have to work harder by bringing it closer to consumers. And also we have to work hard on making them taste good, because I think it's definitely great. Now, there's this protein hungry market and, you know, the more kind

of sustainability oriented folks that are going to buy these new things. But for me, the ultimate test here, if we're going to be eating insects properly, is ok, can someone replace, you know, meat portion out of their diet with insects? And I think to get your average Joe into this, I think it should cost the normal amount of money, which is a completely different conversation. But importantly, if it tastes good or if you can make it taste really good, then it's a completely different proposition. We tend to love them regardless of how bad they are for us or the environment. So if we can reach that point and I think, you know, from all the work we've done on the processing front, it is possible to turn, you know, squirmy little critters into delicious culinary experiences with the right kind of know-how and technology.

Lukxmi Balathanan [00:14:27] Yeah, I agree with you. At the end of the day, for consumers, it's about taste. Anything that tastes delicious, whether it's going to be clogging up arteries, we're going to be all about it. Just sort of coming back to you in terms, types of you know, how you use insects or what led you to set up Better Origin?

Miha Pipan [00:14:45] Yeah, it was a very kind of accidental start for us I would say. We were students at the time and we sort of independently joined this business competition with my co-founder and we were put together and, you know, so it kind of started this journey about more than five years ago now. And I didn't think beforehand I would end up in insects. You know, I had different biological plans. But when this started, this opportunity started coming along and, you know, this was relatively shortly after the influential FAO paper about eating insects. And it just, everything started clicking you know, we have these problems food waste, we have this like disconnected food chain. At the same time, we have more demand. We have a necessity to become more sustainable if we want these systems to persist through time and meet our requirements. And insects really ticked a lot of these boxes and more in their ability to solve some of these problems. So that's sort of how I got into it. And since then, you know, it's been a very interesting journey of setting up the first facilities to then expanding, to designing products, to developing technology. I think, you know, a lot of the companies in our sector, it's been a long technology development early on. So unlike, let's say, a business where the technology exists and you're just looking for a new application, a lot of our work has been in actually, you know, how do we grow these insects? How do we process them afterwards? How do we preserve them? How do we make them safe? How do you integrate them into animal food? Does it work? You know, when you feed it to animals do they like it? Are there benefits? It's been a long journey to make sure that, you know, the science checks out. And I'm happy to say that now it's reached the stage where, you know, technological risks are starting to kind of wash away. It is more of a question of, you know, let's get this technology out there. Let's scale it! Let's start creating impact out of this, because there's a long way to go to apply these positives that insects might bring in our food chain. And I think now we're in one of these situations where actually we have to be smarter and we have to be faster because we don't have 50 years to organically grow this thing.

Lukxmi Balathanan [00:17:07] Absolutely.

Matt Eastland [00:17:08] And could we talk about your tech? So, you know, one of your first solutions is branded like the automated insect mini farm, I think it was. So from the press photos I've seen, it just looks like this incredibly cool shipping container right? So I was just wondering for the people listening, could you explain what it is and how it's going to benefit farmers and the consumers? And almost like walk us through it. So you open the door, if there is a door! What does it look like inside? What goes in? What comes out? You know, it's fascinating stuff.

Miha Pipan [00:17:39] So, no, absolutely, I'm loving that you're saying the word cool associated with this.

Matt Eastland [00:17:46] It is cool come on.

Miha Pipan [00:17:46] I know, I agree. But, you know, it's a good to hear people say that when they are not directly involved in it. So our goal here, our aim, is really to build something we're calling the Internet of insects. And that's very much, you know, like the Internet. We're looking at a network of decentralised capacity to grow insects on various biomasses. So that is using these wonderful containers that we've called the X1.

Matt Eastland [00:18:18] Nice.

Miha Pipan [00:18:18] As a base conversion unit, if you will. So with the way it works is it's, you know, your standard shipping container, let's say twenty, thirty, forty foot one, depending on the capacity you want to go for. And it literally does what it says on the tin. You put your waste on one end and then magic happens inside and you get your maggots on the other end. So the technology, it kind of uses it. It takes bits and pieces from a variety of biological engineering and, you know, I guess computational practises these days. So there's quite advanced preparation of the feedstock. One of the big questions in this industry that's been not slowing it down, but sort of that's always been a concern on everyone's mind, is the safety of the feedstocks that are used. So it's very important to ensure that whatever you feed your insects is safe because otherwise it could get transferred down the chain. And there's some smart solutions that would come up there that allow you to actively control that safety profile of the feedstock. And this feedstock is prepared on one side of the container, if you will. And then it runs on the other side of the container where we have an automated system. I mean, most of the insect rearing these days is based on some type of container. So what we use is, you know, your standard kind of off the shelf, you are in norm trays, as most other producers are, at least of the crawling insects, and might be a little bit different for Phillip because they have, you know, crickets jump.

Philipp Egli [00:19:51] ahahaa yeah.

Miha Pipan [00:19:52] So its slightly more complicated with them. But when you're not growing black soldier fly larvae, which is what we're focussing on, you know, they tend to stay in the container you put them on.

Matt Eastland [00:20:01] Right. So there's no risk of you being swarmed by flies.

Miha Pipan [00:20:05] Aahahah no, no, no. So our containers are really only - they only have the larvae stage of the black soldier fly present in there. The flies, having sex and laying eggs that happens somewhere else.

Matt Eastland [00:20:20] Lovely.

Miha Pipan [00:20:20] This is just the sort of business end of it. This is the actual bio convergence. So this is the unit where you can bring x many tons of your waste input. And that could be a variety of things right? Obviously, within the framework of what's legal right now, which is, you know, it's quite a specific list there. There is quite a few limitations still out there which prevent the full utilisation of all sorts of biomass waste. But it's essentially turning that into insects very much by using some interesting logistical advantages from

the insect. You know, one of the really crazy things is that a baby maggot is going to be less than like a milligram in size. But over the course of two, three weeks, that mass increase can be several thousand fold.

Matt Eastland [00:21:06] Wow.

Miha Pipan [00:21:06] So we're really talking about logistic hacks. You know, you don't need to transport your waste fifty kilometres up the road. You're only really need to send a parcel that's going to have, I don't know, a couple kilos and that's going to be able to deal with tons of material on site and turn it into insects. So these X ones are very much the nodes of this Internet of insects we're building. And the goal here is to provide bio conversion capacity in a flexible manner on farms, on food processing facilities in the future, potentially waste as well, and whatever becomes possible as the regulation advances. But it is the grand vision, as you know, to solve this problem of biomass wastage, which is also causing a lot of emissions, whilst at the same time effectively upcycling this prime quality nutrients that can be used currently as feed. But in the future, you know very much there might be food applications or other applications as well.

Lukxmi Balathasan [00:22:10] So with both of your companies. So, you know, the problems you're aiming to solve and the solutions can make a lot of sense using a highly nutrient rich protein source that's going to have a much lower carbon footprint. But for the general public, it's still quite unfamiliar, especially in Western societies. And a lot of work needs to be done to break the stigma around insects. And, you know, I guess this perception, this human perception is going to be sort of your first barrier to growth I imagine. So, Miha, like what are your sort of thoughts on this? in terms of the barriers that you currently face. What do you think?

Miha Pipan [00:22:44] Well, I think, you know, we probably have it easier compared to Phillip and he'll probably pitch in on this afterwards because we are feeding livestock as the first call right? So it's not a direct consumption to the consumer, which the stigma makes it a little bit easier from this perspective. What's quite funny, actually, is, you know, a lot of the time when we were doing research on this, we found out that most consumers don't actually know what livestock eats at the end of the day. They don't know what the chicken ate that they're buying.

Matt Eastland [00:23:19] That's interesting.

Miha Pipan [00:23:19] So they didn't really like a lot of the respondents, they didn't really have an opinion.

Lukxmi Balathasan [00:23:26] Ok.

Miha Pipan [00:23:26] Till they kind of started to know actually this is what's happening. So what you're offering makes like a lot of sense as a replacement. The ones that maybe are a bit more kind of in touch with farming. They tend to jump to conclusions like duh like obviously, you know, we're going to feed them insects. That's what they would eat in nature.

Lukxmi Balathasan [00:23:46] Right.

Miha Pipan [00:23:46] They were wild or, you know, old school farming, kind of small farms. If you look at chickens, for example, which is one of the first markets we were

focussing on. I mean, if you give a hen the liberty to do whatever she chooses like she spends the rest of the day looking for maggots.

Matt Eastland [00:24:05] Ahaha right.

Miha Pipan [00:24:05] So, you know, naturally when you deliver these kind of things, it creates a lot of sense. I think both for the consumer as well as the animal and the entire kind of food system around it. But I would say, yes, it's a lot easier if you're kind of feeding it to animals to sort of get it across and get those products.

Lukxmi Balathanasan [00:24:27] Is there a potential? I don't have much in terms of...I always hear black soldier flies using in feed. Is there exploration of using it as a human source of protein?

Miha Pipan [00:24:38] Yeah. I mean, funny that you ask that. I think there is potential in that definitely going forward. Maybe it wasn't really up, you know, it's not kind of like a priority for most black soldier fly companies that I know of. Because if you look at the flavour, you know, mealworms and crickets taste way better.

Lukxmi Balathanasan [00:24:57] Ok.

Miha Pipan [00:24:57] Than black soldier fly larvae as a default. But having said that and kind of referring to what I said earlier about processing, I think it's by no means an end game for black soldier fly and food right? There are ways to make it taste good. And I think if you start looking at those kind of applications, then I don't really see a reason why they wouldn't eventually end up there. We're probably unlikely to see us any time soon, though, because like most companies that I know of active in this insect species are focussing on feed or some other commodities. So we'll probably have to wait a little bit longer.

Lukxmi Balathanasan [00:25:39] Ok.

Matt Eastland [00:25:40] Lovely. And actually, let's flip over to the human side then, shall we? So, Philipp, I mean, what are you guys doing to accelerate awareness of your products? And how are you trying to convince the public to change what, you know, would be like usual cheese and cracker routine into addressing, let's be honest, the yuck factor.

Philipp Egli [00:26:00] I was just thinking about the example with the hen that is looking for the maggots until the end of all days and we are looking for that kind of consumer, and it's hard to find them. But, you know, to be honest, we think that the flavour that's the key to make it tasty. That's really the ultimate goal that we're proceeding. And then second one would also be let's call it the overall appearance. How is it perceived? Is it something that is, you know, cool and hip or is it something that is kind of yeah, as you say disgusting and crazy. And, you know, in marketing, that's all kind of a challenge. But it's also really interesting. And in Switzerland, there is not many companies involved in this. And so what we are trying is to do something. Maybe if I can, you know, take a vision. We're trying to do this Tesla experiment. So, you know, electric cars used to be something that was, you know, this fair of nerds. And then Tesla came along and made this really cool car. And now everyone wants to buy a Tesla. And the price is not even a question anymore really. It's just that this is one of the coolest cars there is. And so environment is kind of an afterthought. It's just people want to have this car because it's cool, because it's sexy. And that's ultimately what we are trying to do with Crick. That's why we rebranded. That's why we, you know, invested money into the appearance, into the packaging and everything.

And I think that's also one of the main differences between food and feed, is we are, you know, pitching to a final consumer. So that's what we spent the last few months with, is thinking how to instantly appeal to consumers, how to avoid the disgust factor even coming up. Because if you talk to consumers about a slaughterhouse and you know how they like to eat or whether they would like to see the beef being processed into hamburger, they would all say no, of course not. And that's the point that Miha made you know, consumers today are kind of very far away from the agricultural systems and the food production. And so, of course, as you guys, many journalists, they always want to talk about this just disgust factor. But that's not something or let's put it this way, it's kind of unfair to talk about it with insects. But then, you know, to avoid talking about this when we talk about meat. So that's we tried to steer the conversation around this topic because we feel that, you know, it's not beneficial to the discussion. And it's an unfair comparison that no one else in the food industry has to face.

Matt Eastland [00:29:02] That's a really good point.

Lukxmi Balathasan [00:29:04] Yeah, it's definitely a fair point. I mean, insects are not a global yuck factor. And, you know, the more been working in this field of food, I realise that there's actually a lot we can learn that Western cultures can learn from Eastern cultures. And, you know, insects are part of the culture. It's part of a dietary norm and widely accepted right? So is there anything that we can learn? That's you've been sort of exploring about making insects, this sexy gourmet alternative proteins that you've been talking about?

Philipp Egli [00:29:32] We actually when we came up with the name Crick, we were... that was only maybe the third iteration we had. One of the earlier versions was actually two to use this cultural heritage that is existent in the Maya culture or the Inca culture, which, you know, were cultures which were living, for example, in the Amazon and in places where they had sparsity of proteins. They didn't have access to fish or other protein sources. And so insects were actually one of the rare protein sources they could consume. And that kept them, you know, healthy and thriving. And until today, you have it in Mexican culture or in Mexican diets. Insects are pretty standard. And we have also worked together with Mexican people in Switzerland, which are trying to promote insects in Switzerland. And that's something that, you know, that's always very interesting and very cool.

Lukxmi Balathasan [00:30:37] Yeah, I'm really looking forward to seeing how we the Western, really start to adopt insects as normal part of our culture. I'm sure it's not going to be straightforward, but I think it's really going to be of great benefit.

Matt Eastland [00:30:49] Definitely. And just so from from talking about, like making them attractive to consumers to eat. But what about farmers? So Miha, you know, how do you make insect-based waste management, something farmers are really interested to get involved in? So is it actually a different story on this side? Is it more about profit?

Miha Pipan [00:31:09] Well, it's certainly, you know, if we're looking at provision of insects for feed to a farmer, it is much more a discussion about the bottom line, the pounds and the pens than packaging and a consumer making the decision to buy you know. So I think there's certainly other drivers behind it. But on that topic, we see a lot of, you know, inbound for our products because farmers are more and more aware that actually, you know, the sustainability problems with the current supply chain and that it's likely that those sustainability problems, although at the moment they might not have an extra monetary burden associated with them. Where we are going, that's likely to occur, you know, rather

than like dropping costs off plant protein, we might see increasing costs of that. COVID has portrayed how disruptions in global supply chains can happen like that, something we might have thought, you know, a year ago. No way, Hosay but like now it's there. So it is there's a lot of factors that are affecting farmer interest in insects and I think the ability to have more control over one's protein supply is a very strong driving force here. Then there is also changing consumer tastes and perception right? I mean, millennials and Gen Z's in particular, I would say, are quite interested in the provenance of their food. More and more kind of information is required about where it comes from, you know, how it's being grown, is it ethical and so on and so fourth. And we are starting to see that, you know, yes, people are willing to pay maybe a little bit of a premium to go for something that they feel better about in terms of the environment or the footprint that they're living. So I think it's both of these kind of conditions start converging or what sort of drives the decisions and the farmers.

Lukxmi Balathasan [00:33:24] And I guess specifically from a Better Origin business point, if you like, how are you looking to accelerate progress and make this scalable? Like, what are your plans?

Miha Pipan [00:33:31] The entire R&D cycle we've done for the past five years has been around how do we make this a solution that is scalable both up and down? So it has to be scalable in terms of, yes, we need to be able to produce thousands of tonnes through the network per year and so on and so forth. But at the same time, it also has to work at a local level because, you know, I mean, otherwise we're just building another big facility that's going to eventually be bound by the availability of biomass around it. So it's going to solve only half of the problem. So with our solution, everything is kind of being geared up to having this thing that can be scaled up and, you know, putting it in a shipping container and kind of building around this modular approach very much embodies that ethos of, you know what, once this is developed, we can go around it and like, start printing out these by the hundreds of thousands. So I'm happy to say that now the technology has been de-risked. It is a question of just starting production and scaling it up. And our company is currently very busy with that for the early adopters of this technology that are going to help us scale it up. But yeah, hopefully that answers that.

Matt Eastland [00:34:46] I think you've both presented a really good case for, you know, for why insects in the food system are definitely part of the solution. But, you know, how big could this go? So, Philipp, I mean, if we adopted consumption of insects as humans across the globe, what impact do you think that would have?

Philipp Egli [00:35:06] Just the other day, I was reading the Agricultural Report of Switzerland, which is published by the government body, and it stated that the emissions attributed to the agricultural sector account for about I think it was something like twenty percent. So a substantial amount of emissions are caused by mainly livestock or a large part is livestock. And so I think if we can start to trim those emissions down, then that is potentially a really great impact. I mean, it's not going to save the world by itself. We still have, you know, a lot of other issues to tackle, but it will be a step in the right direction. But what I would hope for really is, you know, Miha, maybe you meant that when you said the money is carbon pricing. That's what I'm thinking about. I mean, I'm as I said, I'm climate economist. And that's kind of the solution that, you know, is most obvious is to put a price on carbon. And, you know, we are all educated to believe that market forces are efficient and lead to the best solution, but if we cannot put a price on carbon, how can we expect to solve the climate solution in an efficient manner? We can't and we won't. You know, so that's it's just really clear. And that would be something that I hope that, you know,

policymakers which are thinking about the agricultural policy of the future that they would take into account.

Miha Pipan [00:36:52] No, that's that's very interesting. I think with this carbon front very much as the great equaliser.

Philipp Egli [00:36:59] Yes.

Miha Pipan [00:36:59] Regardless of what kind of industry you look at. So, you know, if our policymakers look into this in more detail, I think an industry like ours is going to benefit massively because of its environmental advantages. But in terms of, I guess, the impact, how big of an impact this can have. You know, what Philip started touching on here is agriculture is a massive source of emissions globally. And, you know, a lot of those emissions will come from wasted food. And we're talking gigatons of CO2 equivalent per year. So loads for those that don't know what a gigaton is. That's a lot. It's budgets of countries and these kinds of things. And that's just looking like the food waste that I meant. You know, if we're looking at other kind of biomass inputs that could be processed within six. Let's look at Manure's, like manure causes like a huge problem in terms of emissions. And, you know, insects, many of the species of insects have been shown to be able to reduce the volumes, to be able to reduce the emissions. It does touch, however, on a very interesting point Phillip made, which is, you know, if you feed insects on, let's say, a less desirable type feedstock, what can you do with it? And I think, you know, the solution there is to have potentially a little bit more of an insect specific legislation in place that allows you to define what kind of feedstocks can insect be fed for a particular application. So, you know, if you're going to use it for human food, I mean, it would be really kind of foolish to try and feed it on manure. Even though the insects might be completely fine with it. And that's part of its natural environment. But there's would be a lot of risk associated with it. However, you could still feed insects with the manure and then not use them for food, but potentially not even for feed. You know, there are some compounds in insects like its shell, the chitin, that's used for a variety of industrial applications is, you know, it's a source of fibre really. So you could look at insects as more than just like let's go for food and feed. There's lot of commodities out there that could be produced from it. And we really then starting to look at this circular economy and insects being a circular economy driver.

Lukxmi Balathasan [00:39:26] Yeah, I mean, it's really early days is really exciting to see how this industry progresses. So on that note, so tell us about what's next to both of you. So, Phillip, what's next for Crick?

Philipp Egli [00:39:37] Crick...I can tell you what we did last is a crowdfunding which we successfully completed in July. That was a first big step for us to get the name out. And now we're building up the customer base. We're looking at direct sales from private people, but also thinking about different ways in how we can reach businesses and certain bigger portions at a time.

Lukxmi Balathasan [00:40:05] Yeah. Absolutely. Good luck and well done on the crowd funding.

Philipp Egli [00:40:09] Thanks.

Lukxmi Balathasan [00:40:09] Way about you Miha? What's next for Better Origin.

Miha Pipan [00:40:12] We're busy now deploying modules. So we've got another module coming online in the next few weeks and we're kind of at these final stages of, you know, getting this technology verified, if you will, in commercial and environments on actual farms rather than just theoretically and academic setups. So what's next for us is scaling this. How do we get, you know, tens, hundreds of these out over the coming years? Besides that as well, getting the name out there, getting Better Origin, you know, our operating brand out there, creating a bit more of a social media presence, taking part in the conversation out there, because we've developed quite a lot of knowledge and, you know, being kind of like nerds, we know about it. But it doesn't help you if you're not part of the conversation and if you're not getting the knowledge out there to, you know, get the debate going. So that's very much where we are now and where we're looking forward to going over the coming months and years.

Matt Eastland [00:41:25] Amazing.

Lukxmi Balathanan [00:41:25] Perfect, we look forward to following your journey.

Matt Eastland [00:41:27] Absolutely. I'm afraid to say, guys, that we're actually running out of time today. So just before we close, I just wanted to ask a final question. So are there any other exciting insect based products that you've got your eyes on? So beyond what you do, is there anything that you've seen going on with insects in the food chain which has really excited you?

Philipp Egli [00:41:49] So apart from the cracker that we have now, we are we have another product in the pipeline, which is what we call it, a protein bowl. And the name kind of speaks for itself. It's not salty like a cracker, it's sweet. And as I said in the beginning, that's, you know, the first target group that we have are protein hungry people. And that's why we came up with this application and protein bowl.

Matt Eastland [00:42:17] Ok amazing. It's great to know about the other products. I was just wondering if there's anything outside of Crick that you've seen with insects, which listeners would be interested to hear about something exciting other than what you're doing?

Philipp Egli [00:42:29] Nothing at all.

Matt Eastland [00:42:32] Ahahahaha now that is the right answer. There you go. Good fair point. What about you, Miha? Anything else other than the amazing things that you're doing?

Miha Pipan [00:42:39] I think some have caught my attention some time ago was Ento milk.

Matt Eastland [00:42:46] Ento milk?

Lukxmi Balathanan [00:42:47] Insect milk.

Miha Pipan [00:42:49] Yeah we live in this age now. That could as well be like defined as the alternative milk age. So it seems that some folks out there have created like an insect milk and they're making ice cream.

Matt Eastland [00:43:03] Wow. I've never heard that before.

Miha Pipan [00:43:05] I think that's like a push, you know, kind of old frontiers of what is possible here. So that's why I'm probably singling it out now, because it is quite exciting to see, you know, that it's not necessarily just a protein powder or what we're talking about or like an animal thing. But, hey, maybe it could be something we put in our, you know, Frappuccino.

Matt Eastland [00:43:28] Okay, wonderful. All right. I'll look that up. Thanks very much Miha. So where can our listeners find out more about both of your products and services? So, Philip, where can people find out more about Crick?

Philipp Egli [00:43:39] crick.ch that's it. That's our home page. Although I have to say, I guess you have an international audience at this point we're only selling in Switzerland. But we are looking at the export opportunities and regulations.

Matt Eastland [00:43:54] Ok thank you. So you heard it here first goes from Switzerland first and then the world. And what about you, Miha? Where can people find out more about Better Origin?

Miha Pipan [00:44:04] Yeah, you can find out more on our website. betterorigin.co.uk and on our social media, which are starting to awaken. So do give us a follow. Cool things coming up in the following days and weeks and months. But yeah if anyone is, you know, sort of interested in what we do and, you know, potentially interested in these, the internet of insects and our modules, then give us a shout out where it's actually very interested to hear from, you know, early adopters.

Matt Eastland [00:44:38] Fab.

Lukxmi Balathasan [00:44:39] Brilliant. Yeah, we'll have to look out for that.

Matt Eastland [00:44:40] Thanks very much Miha.

Lukxmi Balathasan [00:44:42] Yeah thank you both so much for joining us today. Really, really fascinating discussion. Insect milk who knew? Looking out for that. Yeah 'll be looking out and following and see how you guys both develop. So good luck. Thank you for being here.

Miha Pipan [00:44:54] Thank you for having us.

Philipp Egli [00:44:56] Thanks again.

Matt Eastland [00:44:57] Wonderful. Thank you very much, guys. And for our listeners out there. I think this is the first time I've ever heard a cricket referred to Tesla in the same sentence on the Internet of insects. So that's definitely staying with me. So thank you, everybody. This has been the Food Fight podcast from EIT Food. Keep fighting for better food future. And if you want to check us out, go to eitfood.eu/podcast and hit us up on Twitter @EITFood. Thanks very much everybody.